8-22-2023 12:00 PM

Medical Practitioners Perceived Benefits and Costs of Volunteering for a Multi-Sport Major Games

Kelsie Stunden, *Western University*

Supervisor: Doherty, Alison, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Kinesiology

Abstract

Volunteering as a medical practitioner at a multi-sport major games (MSMG) is a career highlight for many, but its benefits and costs have not been thoroughly explored. Framed by Social Exchange Theory, this study aims to address this gap by examining the experiences of medical volunteers at a recent MSMG. An online anonymous survey, based on Doherty's (2009) study of Jeux du Canada Games volunteers, was completed by 78 Canadian medical practitioners who had volunteered at a MSMG in the previous six years. The study revealed that professional identification and networking were the greatest benefits experienced by medical volunteers, while personal inconveniences to their family, work, or vacation time were the greatest costs. The medical volunteers valued professional gains more than social enrichment or contributing to the event. The findings offer valuable insights into the factors that drive medical practitioners to engage in future volunteerism at MSMG.

Keywords

- Multi-sport major games
- Sport events
- Medical volunteer
- Medical practitioner
- Volunteerism
- Volunteer Experiences

Summary for Lay Audience

The purpose of this study was to gain a further understanding of the unique group that is medical volunteers at a multi-sport major games (MSMG). Their role is to provide injury and illness assessment and management along with on field emergency care to each participating athlete. Without them, MSMG cannot happen. Canadian medical practitioners who have volunteered at a MSMG between 2017 and 2022 were surveyed about their most recent MSMG experience. Through an anonymous online survey, they were asked to report on their experienced benefits and costs, and what aspects of the experience they were most satisfied with. A number of statistical analyses were used to determine what aspects of their experienced benefits, costs, and satisfaction impacted their overall satisfaction and their intent to volunteer again for another MSMG hosted in their community, their province/territory, or anywhere in Canada. The analyses identified professional identification as the greatest experienced benefit and personal inconvenience as the greatest cost experienced by the medical volunteers. They reported being most satisfied with the daily organization of their volunteering (scheduling, logistics, resources, comfort, etc.). Professional development and unreasonable expectations were the most impactful to the medical volunteers' overall satisfaction. Finally, the benefit of professional development and satisfaction with volunteer management (parking/transportation, food services, and volunteer recognition) at their most recent MSMG were significant factors in their intent to volunteer for another MSMG hosted in their community and province/territory. Both these factors also contributed to their intent to volunteer for another MSMG anywhere in Canada, along with their experienced satisfaction with the volunteer context (their assigned venue, sport, and volunteer team). The study findings have implications for recruiting medical volunteers for MSMG and ensuring they have a positive experience there with benefits outweighing the costs of being involved.

Table of Contents

List of Tables

List of Appendices

1 Introduction

A multi-sport major games (MSMG) may be a highlight of many sport medical practitioners' careers. These practitioners are valued members of the volunteer workforce at these events and bring with them a unique education and set of skills. Their role is to support the wellbeing of each participating athlete by offering injury and illness assessment and management, and on field emergency care. This involvement can require travel nationally or internationally, depending on the location of the event, and significant time away from their family, friends, and employment. Olympic Games, Youth Olympic Games, Paralympic Games, Commonwealth Games, Universiade and Jeux de la Francophonie are examples of international MSMG where athletes and volunteers travel from all over the world to compete and support the competitors on the grand stage. The Jeux du Canada Games is an example of a national MSMG event that provides a platform for high performance athletes to compete in their home country and succeed in their sport as well as life after sport (Jeux du Canada Games, n.d.). The number of competing athletes varies between events. From 2018 to 2022 the number ranged from 650 athletes at the 2022 Winter Paralympic Games in Beijing, China (International Paralympic Committee, 2022) to 11,420 at the 2021 Summer Olympics in Tokyo, Japan (International Olympic Committee, 2020). To run an event of this magnitude, organizers depend on a solid volunteer workforce (Cuskelly et al., 2006; Reeser et al., 2005). Volunteers at these events are tasked with operational roles such as sport administration and implementation, accessibility services, event services, ticketing and merchandise, fit-out, food and beverage, media, official languages, partnership activations, protocols, security and essential services, sustainability, technology, transportation, venue operations, volunteer services and medical services (Niagara 2022 Jeux du Canada Games, 2022). Volunteers, by definition, are not financially compensated for such contributions (Cnaan et al., 1996; Petkau et al., 1991). As a result, the cost of the workforce to the organization is minimal (Gallarza et al., 2013). It has been said that a volunteer's contribution can often differentiate between an event's financial deficit or surplus (Angosto et al., 2021; Lockstone & Baum, 2009; Solberg, 2003; South et al.,

2020) and without the efforts of the volunteer workforce, these events would be unsustainable for event organizers (Green & Chalip, 2004).

To fill the forementioned volunteer roles a diverse set of skills, experiences and expertise is required including, at times, specific education, and professional designations, as is the case with the medical volunteers (Cuskelly et al., 2006). The term medical volunteer will be used throughout this study and refers to medical practitioners who have maintained active status with their respective professional association. Medical volunteers are situated in various locations throughout a games and can be a part of the host medical team, the core medical team, or team medical. Host medical team refers to the group of medical practitioners who are volunteering in support of the MSMG organizing committee and are not directly associated with any team, province, or country. The core medical team is a group of medical practitioners selected by their country or province to provide volunteer medical services specifically for the athletes and teams of that country or province. Host and core medical teams work together at the polyclinic (typically in the Athletes' Village) and on location at each of the sport venues. Finally, team medical are medical practitioners who are selected to volunteer with a specific National Sporting Organization (NSO), such as Canada Basketball or Hockey Canada, or Provincial Sporting Organization (PSO) such as Ontario Volleyball. They accompany a specific team to the games and provide medical services at training, competition and pre and post event for that team.

In Canada, in order to apply and be selected as a medical volunteer the candidate must hold a First Responder Certificate and be an active member of one of the following professional associations: Canadian Academy of Sport and Exercise Medicine (Dip. Sport Med.), RCCSS(C) Royal College of Chiropractic Sport Sciences (Canada) (Fellow – Sport Sciences Residency Program (SSRP)), Sport Physiotherapy Canada (Dip.SportPhysio), Canadian Athletic Therapist Association (CAT(C)), and Canadian Sport Massage Therapists Association (Sport Fellow). Active membership with these professional associations provides the following designations as the minimum requirement to volunteer for the games: Physician (Dip. Sport Med.), Registered Chiropractor (Fellow – Sport Sciences Residency Program (SSRP)), Registered

Physiotherapist (Dip.SportPhysio), Certified Athletic Therapist (CAT(C)), and Registered Massage Therapist (Sport Fellow). This unique volunteer prerequisite is the driving force behind this study on medical volunteers.

Medical volunteers utilize the skills they apply every day in their employment to their volunteer role. You can often find them employed with sport medicine and therapy clinics; professional sports; community, high school and post-secondary athletics; NSO and PSOs; teaching and scientific research units at universities and colleges; hospitals, as well as family health teams, government, and municipal services (Canadian Academy of Sport and Exercise Medicine, 2023; Canadian Athletic Therapists Association, n.d.; Canadian Sport Massage Therapists Association, 2019; College of Chiropractors of Ontario, 2018; Sport Physiotherapy Canada, 2015). They also work with both the abled and disabled athletic population (Quinn & Misener, 2022). If these practitioners work in the field and provide these services for cost, what is the benefit to volunteering for such an event? What is the perceived cost to doing so? What is the likelihood that these medical volunteers will volunteer again for another local, provincial, national, or international MSMG? These questions cannot be answered with the current literature available as a gap in the research and knowledge has been identified with this unique group of volunteers. Research has been conducted regarding sport event volunteerism in general (Angosto et al., 2021; Costa et al., 2006; Doherty, 2009; Solberg, 2003; South et al., 2020) and regarding medical policy and procedures specifically (Grant et al., 2014; Lertwanich et al., 2011; Razumovskaya et al., 2014; Vasquez et al., 2015). Yet, there is limited research regarding the medical volunteers themselves; what benefits and costs they have experienced volunteering for a games and what factors contribute to their future involvement or not. This study will add to the literature by contributing to the knowledge regarding medical volunteers at MSMG. The objective of this study is to describe the benefits and costs medical volunteers have experienced in a recent games, review their satisfaction with their experience, and identify the factors that contribute to future volunteerism.

1.1 Research Questions

The following research questions guided this study:

1. What were medical volunteers' greatest benefits of volunteering for a multi-sport major games?
2. What were medical volunteers' greatest costs of volunteering for a multi-sport major games?
3. Were medical volunteers satisfied with their experience?
4. What factors contributed to the medical volunteer's overall satisfaction?
5. What is the likelihood that these practitioners will volunteer again for another local, provincial, national, or international multi-sport major games and what factors contribute to that intention?
6. Are there any differences in the medical volunteers' experiences, satisfaction, and future intentions between the type of medical profession and type of medical role (host, core, team)?

2 Literature Review

2.1 Multi-Sport Major Games

Multi-sport major games (MSMG) refer to periodic, time-bound, and globally significant competitions (Doherty, 2009); for example, the Olympic Games, Paralympic Games and Commonwealth Games. The host location for one of these events is typically selected from a pool of bids put forward by several cities/groups of cities (Baum & Lockstone, 2007). The games are typically organized collaboratively with the representative body (e.g., International Olympic Committee, Commonwealth Games Federation), the Federal Government of the successful bid country, and the host city organizing committee (Roche, 2000; Byers et al., 2012; Fairley et al., 2016). Hosting such an event can bring with it positive impacts on a community's economic, political, social, and cultural climate (Getz, 1997). In the last six years, from 2017-2022, there have been 20 MSMG held nationally and internationally, with the number of athletes competing at each event ranging from 500+ to over 11,000 (Jeux du Canada Games, 2022; Commonwealth Sport, 2022; International University Sports Federation, 2022; International Olympic Committee, 2020; International Paralympic Committee, 2022; Youth Olympic Games, 2022). Events of this magnitude require the help of dedicated volunteers to be successful (Cuskelly et al., 2006; Roche, 1994) which can include upwards of 40,000 to 60,000 individuals, depending on the size of the event (Baum & Lockstone, 2007).

2.2 Sport Event Volunteerism

The term volunteer has been defined in various ways. Petkau et al. (1991) defined a volunteer as anyone who gives their time and skills without financial compensation. Cnaan et al. (1996) used the following four key dimensions to help define an individual who is a volunteer: (a) One who completes their role on a completely voluntary basis with no outside obligation; (b) whose reward is less than the value of work or service provided; (c) whose work is provided to a formal organization; and (d) whose service is provided to those other than themselves. More recently, Gallarza et al. (2013) defined a volunteer as "an individual who obtains positive outcomes from his/her volunteering experience while sacrificing time and effort" (p. 107). This more recent definition

provides some insight into a contemporary consideration of volunteers. They are no longer seen as strictly self-sacrificing, and volunteer positions entail more of a give and take relationship (Holmes et al., 2010; Reeser et al., 2005). Researchers have defined the term volunteer in the general sense; however, it can also be applied to sport event volunteers. Researchers have identified a number of benefits and costs experienced by the sport event volunteer and these are considered next.

2.3 The Benefits and Costs of Volunteering

The benefits of volunteering in general can vary between different individuals. Researchers have reported that, while some younger adult volunteers benefit from gaining knowledge and potential career advancements, older adult volunteers tend to see more benefit in the social connection and the opportunity to take a break from their primary career (Barlow & Hainsworth, 2001; Ho et al., 2012). Volunteers above the age of 65 have been shown to benefit from better physical function, higher levels of life satisfaction and self-rated health, better cognitive functioning, specifically with memory and cognitive processing, lowered depressive symptoms, and lower mortality rates as a result of volunteering (Jiang et al., 2021; Lum & Lightfoot, 2005; Morrow-Howell et al., 2003; Musick & Wilson, 2003; Proulx et al., 2018; Sherman et al., 2011; Tang, 2009; Tang et al., 2010; Van Willigen, 2000).

The volunteer context or environment can impact people differently as well. Windsor et al. (2008) examined 11 different volunteer duties (e.g., fundraising, teaching, coaching, preparing food) and found that women who volunteered for management or committee roles were more positively impacted by the experience. Celdrán and Villar (2007) examined the motivations, satisfaction, benefits, and drawbacks of volunteering as an older adult in different environments and found that self-esteem and mastery were elevated for the volunteers in the social services and cultural organizations but did not have the same effect on those volunteering in managerial organizations. It is important to understand the experienced benefits of volunteering in the MSMG context.

Several studies have looked at the benefits and costs associated with volunteering in sport, and specifically MSMG. Elstad (1996) found student volunteers at the 1994

Olympic Games in Lillehammer benefited from improved social skills, increased knowledge of society in general, and job specific competencies. In a study on the planning and on-site volunteers at 2001 Jeux du Canada Summer Games, Doherty (2009) discovered that planning volunteers - those who are involved for several months or sometimes years leading up to an event - experienced the benefits of working with different people, making new friends, using, and developing new skills, enjoying the 'perks' of volunteering to a greater extent than on-site volunteers. On-site volunteers - those who are strictly involved during the event itself - experienced similar benefits but to a lesser degree. Both the planning and on-site volunteers reported social enrichment as the greatest benefit, which included meeting people from their community as well from all over Canada and working with like-minded and committed fellow volunteers. More recently, South et al.'s (2020) study on volunteer experiences and impacts one year following the Glasgow 2014 Commonwealth Games determined benefits experienced from their volunteerism included enjoyment, increased social connections and networks, increased confidence, broadened experience and skills, and increased employability, as well as feeling proud and grateful to have been able to participate in the event.

While there have been multiple reported benefits of volunteering, there is a cost associated that must be taken into consideration as well. Elstad (1996) highlighted the students' out of pocket expenses for transportation and food, having too little or too much to do, and poor organization of volunteers as the largest downsides to their volunteer experience. Doherty (2009) considered the cost differences between planning and onsite volunteers. She discovered that, while volunteers experienced a range of costs to a limited degree, the planning volunteers reportedly experienced a greater inconvenience to their personal lives, an increase in task pressure, being taken advantage of by staff and other more senior volunteers, and insufficient number of volunteers for the workload than did the onsite volunteers. South et al. (2020), on the other hand, reported very few negative impacts experienced by the volunteers they studied. It is imperative that the perspective of the volunteers is understood so that roles can be created, or maintained, that will provide more benefits than costs, with the intent of promoting committed engagement with the event, a positive experience overall, and future involvement.

2.4 Volunteer Satisfaction

It is important to also consider what aspects of MSMGs may impact volunteers' overall satisfaction, as satisfaction can impact a volunteers' performance and attendance during the event (Cuskelly & Boag, 2001). In Doherty's (2003) report on her findings from the study of 2001 Jeux du Canada Games volunteers, she noted that both planning volunteers and onsite volunteers were quite satisfied with their experience, specifically their working environment. Planning volunteers were most satisfied with how safe and comfortable they were, and the onsite volunteers were most satisfied with their supervisor and venue team. Larocque et al. (2002) contributed to the research with their study on volunteers at the 2001 Jeux de la Francophonie and found high levels of satisfaction with the quality of the volunteer teams and recognition from the organizers. Farrell et al.'s (1998) study on volunteers at an elite sporting competition revealed communication with other volunteers and volunteer recognition were significant predictors of their overall satisfaction. They also noted the organization of daily operations can have a positive effect, yet the physical facilities can have a negative effect on their satisfaction. They concluded that event managers can play a role in providing a positive experience for volunteers. Aisbett et al.'s (2015) research on volunteers at the 2013 Australian Masters Games highlighted the impact of organizational support on volunteer satisfaction but also determined that a supervisor's perceived support had little contribution. Holmes et al. (2018) noted management style as cause for volunteers' dissatisfaction with the recruitment and training process of the London 2012 Olympic Games, to the extent that the Games' inflexible program management approach led some volunteers to withdraw before the event even began. Costa et al. (2006) supported these findings with their work on volunteers at the IndyCarnival on the Gold Coast of Queensland, Australia. They found that allowing volunteers to share their opinions and experiences during training increased their sense of community and, indirectly, their overall satisfaction with their volunteer role. It has been argued that how an organization responds to problems, the importance of building relationships between volunteers, and strengthening one's personal network can all impact a volunteer's overall satisfaction (Elstad, 1996; Garner & Garner, 2011).

2.5 Factors Impacting Continued Volunteerism

Understanding what factors can impact a volunteers' intent to volunteer again will benefit event organizers by having volunteers with enhanced experience, knowledge, and skill (Elstad, 1996). Half of volunteers from the 1998 World Junior Curling Tournament and 85% of volunteers from the 2002 Commonwealth Games indicated they would volunteer again following a positive experience at each of the events (Downward & Ralston, 2006; Twynam et al., 2002). This could entail a positive experience with personal development, their volunteer assignment and/or community experience. Gravelle and Larocque (2005) studied continued volunteerism in the context of the 2001 Francophone Games, framed by Stebbins' (1998) theory of "serious leisure." The concept of "serious leisure" is defined as having "perseverance, an opportunity to follow a career, effort in acquiring knowledge, training in skill, durable benefits, strong identification with the chosen pursuit, and a unique character of spirit" (Gravelle & Larocque, 2005, p. 6). The investigators determined that social benefits, including being part of the culture, being with friends, gaining personal experience, and being part of a group, can impact a volunteers' intent to continue their participation in future events. Volunteers also indicated their intent to return for another event to the extent they felt their MSMG experience enhanced their skills as well as developed their professional and personal abilities. Lack of recognition, lack of training, the attainment of personal goals, and seeking different experiences were all reasons why a volunteer would not continue their involvement (Gravelle & Larocque, 2005). The study confirmed the relationship between volunteering and "serious leisure", and that continued volunteerism is more likely when the volunteer feels they will gain personally and professionally (Gravelle & Larocque, 2005). Fairley et al. (2016) studied the perceptions of volunteers following the 2000 Sydney Olympic Games, with 13 out of 15 respondents indicating an increase in volunteerism after that MSMG. Working and interacting with more senior volunteers at the event opened their eyes to other volunteer opportunities, and provided other environments where their experiences could be put to use while incorporating a social aspect. Consistent with Gravelle and Larocque (2005), Fairley et al.'s (2016) study expands on the work of Doherty (2009) whose study on the legacy of volunteering at a major sport event supported the idea that positive experiences at major sport events for

volunteers are more likely to encourage future volunteerism. More specifically, Doherty (2009) reported differences in the event experiences between the planning volunteers and the onsite volunteers. With planning volunteers, personal inconvenience, while minimal, was the sole significant predictor of continued volunteerism. In contrast, with onsite volunteers', interacting with other volunteers, games participants, and spectators, contributing to one's community, and skill development, were significant predictors of future volunteering intentions.

2.6 MSMG Medical Volunteers

2.6.1 Historical overview of Sport Medicine in Canada

In the late 1960s and early 1970s, following WWII, the Canadian Government started to focus its efforts on growing Canada's high performance sport system (Safai, 2005). In the pursuit of sporting excellence, the inclusion of core medical volunteers as part of the athlete support team was implemented to ensure exceptional care for those competing at national and international MSMG. The move was implemented following the Canadian athletes' experience at the 1968 Mexico City Olympics. Canadian athletes travelled to the event with no medical support and relied strictly on what the host provided. While not always the case, in this instance, the athletes were met with what only can be described as subpar care (Safai, 2005). This sparked the development of a formal organization called the Sport Medicine Council of Canada (SMCC), which merged the occupations of Sport Medicine Physicians, Sport Physiotherapists, Certified Athletic Therapists and Sport Scientists, and tasked them with streamlining medical services for high performance athletes at MSMG (Safai, 2005). In 1976, Canada hosted the Olympic Games in Montreal, which was the first occasion where all four professional groups worked together to provide a successful delivery of sport medicine services to Canada's high-performance athletes. The success of the medical services delivery at this event triggered the increase in funds from the Canadian government into the SMCC via Sport Canada. These funds were used to create programs and initiatives that were emulated by other nations and became the gold standard world-wide (Safai, 2005). The professional associations originally involved in the SMCC were in their early stages of development, all having been founded between 1965 – 1972 (Safai, 2005). They required funding from

Sport Canada to continue their growth and, in return, their members volunteered their time and expertise to MSMG. The SMCC dissolved in the early 1990's after Sport Canada started to channel funds more directly to the athletes. The professional associations continued to grow but no longer received financial support from Sport Canada (Safai, 2005).

Fast forward to today, and each International Sport Federation and/or NSO, depending on the level of the games, has a minimal requirement for medical coverage for the athletes. It is the responsibility of the host committee to ensure sufficient medical support is in place for each sport event. For example, the Fédération Équestre Internationale minimally requires the medical coverage onsite throughout the entire event, including training, with emergency medical care with additional training in trauma (Fédération Équestre Internationale, 2021). The Fédération Internationale de Football Association (FIFA) requires two four-member medical teams on the sidelines comprising of "medical, nursing and paramedical professionals who are trained in basic life support measures as a minimum level of care, and that at least one member of the field of play team be qualified and experienced in out-of-hospital advanced life support" (Al Jufaili et al., 2015 p. 102). Any additional paramedical services are provided based on the risk of injury or illness associated with the sport, the anticipated number of athletes and spectators, the location of the venue, and proximity to hospitals and ambulance services (Fédération Équestre Internationale, 2021). The medical volunteers are equipped to provide the services required by the International Sport Federations and continue to voluntarily support the mission to put athlete health and safety as the priority in each of the games.

2.6.2 What is a medical practitioner?

Participation in sport at a high-performance level, including MSMG, unfortunately comes with the possibility of physical, mental, emotional, or behavioral consequences to the athletes (Zachazewski et al., 2012). The initial assessment and management of these consequences, in the form of injury or illness, are the responsibility of several medical practitioners with the primary goal of protecting athlete health and welfare (International Olympic Committee, 2016). With this goal at the forefront, medical practitioners use their knowledge and expertise to assist the athletes and, when possible, support a safe

return to play/competition following illness or injury (Zachazewski et al., 2012). Medical practitioners, for the purpose of this study, will be referred to as medical volunteers and are active members of one or more of the five professions highlighted in the introduction: Physician (Dip. Sport Med.), Registered Chiropractor (Fellow – Sport Sciences Residency Program (SSRP)), Registered Physiotherapist (Dip.SportPhysio), Certified Athletic Therapist (CAT(C)), and Registered Massage Therapist (Sport Fellow).

Defining sports medicine has been a challenge for many years. It does not strictly refer to qualified doctors as there is considerable overlap in responsibilities, research interests and clinical practices among different medical professions (Malcolm & Safai, 2012). Just as medical professionals have a responsibility to "do no harm" and "make the health of the athlete the priority" (International Olympic Committee, 2016), the same goes for their volunteer role. They have a responsibility to practice evidence-informed decision making and communicate effectively the risk involved with returning to play after an injury or illness (International Olympic Committee, 2016). It is common for medical practitioners to show a great passion for their chosen profession, the sport itself, and the athletes who depend on them (Zachazewski et al., 2012). It is imperative they demonstrate a high level of skill and confidence while maintaining a calm patient demeanor in what could be a very critical time during an athlete's career (Zachazewski et al., 2012).

When a medical practitioner works in the field, be it on the playing surface with an athlete or a team, their roles are all similar. They all hold at a minimum a first responder certification and are onsite to provide basic emergency life support, first aid, recognition and management of acute traumatic injury or neurological dysfunction, sideline injury assessments, return to play decisions, taping and wrapping of musculoskeletal injuries, concussion recognition, assessment and management, and preparation for entrance into appropriate health care delivery systems (Ontario Athletic Therapists Association, n.d.; College of Chiropractors of Ontario, 2018; Government of Ontario, 2021; Canadian Sport Massage Therapists Association, 2017; Canadian Academy of Sport and Exercise Medicine, 2023). While their volunteer role is similar, different professions have access to different controlled acts that can impact the way they would treat a particular situation. A controlled act is an activity that can be performed in healthcare by only a qualified

health professional due to its increased risk of harm (College of Physiotherapists of Ontario, 2023); for example, communicating a diagnosis, relocating or repositioning a fracture or dislocation, or performing procedures on tissue below the dermis, stitches or acupuncture. A full list of controlled acts according to professions is provided in Appendix C. Certified Athletic Therapists do not have access to controlled acts as controlled acts are reserved for those who are active members of a regulated health profession (Ontario Regulated Health Professions Act, 1991). As an exception, Certified Athletic Therapists can perform the controlled act if it is delegated to them by a qualified member of a regulated health profession (Ontario Regulated Health Professions Act, 1991).

Medical professions can be further differentiated based on their scope of practice. Sport and Exercise Medicine Physicians (Dip. Sport Med) are governed by provincial/territorial legislation and regulatory bodies but generally have the same scope of practice and access to controlled acts within Canada. They assess, diagnose, and manage musculoskeletal injuries, create treatment plans using a combination of exercise, pharmaceuticals, and lifestyle changes, treat exercise related medical problems such as concussions and asthma, sporting event medical coverage, anti-doping, and mental health, and finally are trained in the prevention of injury and medical illness related to physical activity and sport (Canadian Academy of Sport and Exercise Medicine, 2023).

The scope of practice of a registered chiropractor includes the assessment, diagnosis, prevention, and treatment, typically with adjustments, of dysfunction or disorders of the spine and the joints of the extremities and their impact on the nervous system (College of Chiropractors of Ontario, 2018). Additional education is required to earn the title Fellow of the College of Chiropractic Sports Sciences and be recognized by the designation FRCCSS(C). Interested chiropractors must complete a full time 2-year program as part of the Sports Residency Program along with practical and hands on training at various sport injury centers and professional placements (Royal College of Chiropractic Sports Sciences (Canada), n.d.).

The scope of practice of a registered physiotherapist is the “assessment of neuromuscular, musculoskeletal and cardiorespiratory systems, the diagnosis of diseases or disorders associated with physical dysfunction, injury or pain and the treatment, rehabilitation and prevention or relief of physical dysfunction, injury or pain to develop, maintain, rehabilitate or augment function and promote mobility”. To become a registered physiotherapist (Dip.SportPhysio) with SPC, candidates must complete a Diploma in Sport Physiotherapy through the SPC. This program provides the candidates with courses in athletic taping, protective equipment, emergency care, concussion management and exercise prescription along with hands on experience through the mentorship program and a culminating written and practical examination (Sport Physiotherapy Canada, 2015).

Certified Athletic Therapists specialize in the prevention, assessment, and care of musculoskeletal (MSK) disorders (muscles, bones, and joints) (Ontario Athletic Therapists Association, n.d.) and have extensive knowledge and education in the areas of MSK, exercise physiology, biomechanics, and one field emergency care (Canadian Athletic Therapists Association, n.d.). In order to attempt the National Certification Exam (NCE), candidates must complete a two, three or four year program from one of the Canadian Athletic Therapists Associations Accredited Institutions. Successful completion of the NCE grants the title of Certified Athletic Therapist.

The scope of practice of Registered Massage Therapists “is the assessment of the soft tissue and joints of the body and the treatment and prevention of physical dysfunction and pain of the soft tissues and joints by manipulation to develop, maintain, rehabilitate or augment physical function, or relieve pain” (Government of Ontario, 2021). To become a Sport Fellow with the Canadian Sport Massage Therapists Association, a candidate must have completed both Level 1 and Level 2 as a candidate, be a member in good standing with their provincial bodies, have proof of liability, maintain a valid first responder, have taken and passed both the written and oral practical certification exams (Canadian Sport Massage Therapist Association, 2017).

2.6.3 Where are medical volunteers located at a MSMG?

Medical volunteers are located in several different areas of a games, including the polyclinic and medical stations at each venue. The polyclinic is a central medical site, often in or near the Athletes' Village, that is staffed with physicians, therapists and, depending on the size of the event, medical specialists such as radiologists, surgeons, or dentists (Chia et al., 2011; Kim et al., 2019; Vanhegan et al., 2013; Zachazewski et al., 2012). Most host committees attempt to manage the majority of illnesses and injuries internally at the polyclinic, to limit the strain on the host community's health services (Vanhegan et al., 2013). Depending on the size of the event, the polyclinic can be equipped with medical imaging, such as ultrasound or magnetic resonance imaging (MRI) and is often fully equipped as a rehabilitation clinic. It is open long hours for availability to the athletes and has 24hr on-call support. For those medical services not available at the polyclinic, some host committees work with the regional health system to expedite further assessment and treatment at the local hospital for participating athletes (Chia et al., 2011). Teams that do not travel with team medical personnel often use the polyclinic more than those that do (Zachazewski et al., 2012). In addition to the polyclinic, medical volunteers are located at medical stations at each sport venue. Sport venues are the different locations throughout a host community that hold the competitions. For example, the Tokyo 2021 Summer Olympics had a total of 42 sport venues and the Paralympics had 21 sport venues that were mostly in a central location (Tokyo) but also spread out the length of Japan (The Tokyo Organizing Committee of the Olympic and Paralympic Games, 2021). The 2022 Canada Summer Games, on the other hand, had 18 sport venues spread throughout the Niagara Region (Jeux du Canada Games, n.d.). Each of these venues had a specific medical station and a medical volunteer team onsite equipped to manage emergency medical situations, acute injury care, and pre/post-event tasks including taping, wrapping, stretching, and hydrotherapy (cf. Zachazewski et al., 2012). Emergent patients are transported to the designated hospital and the non-emergent patients are transported to the polyclinic for further evaluation and treatment (Chia et al., 2011). While the priority is the athletes, the medical volunteers at each sport venue can also be responsible for the care of coaches, officials, media,

sponsors, VIPs, and the volunteer workforce, should immediate medical care be required (Chia et al., 2011; Zachazewski et al., 2012).

2.6.4 How are medical volunteers selected for a MSMG?

The host medical volunteers typically submit their application through the games website to be reviewed and selected by the organizing committee. Team medical are selected by each NSO for the specific team with which they will be working. The Canadian core medical volunteers, on the other hand, are selected by Major Games Canada (MGC). That process was originally the responsibility of each professional association to select a team of medical volunteers, however it is now the responsibility of MGC, a subunit of the Canadian Olympic Committee. MGC has been in existence for over 20 years and was originally called the Franchise Holders Working Group (L. Lafrenière, personal communication, February 25, 2022). Their mandate is to develop efficiencies between Canada's six International Franchise Holders: the Canadian Olympic Committee (COC), the Canadian Paralympic Committee (CPC), Commonwealth Games Canada, U SPORTS, Canadian Heritage (for the Games of La Francophonie) and the Canada Games Council and they are primarily responsible for the management and coordination of the "Health Services Team" (Core Medical) for MSMG in Canada and internationally (Major Games Canada, 2023). Each franchise holder has the responsibility to provide Canadian athletes with consistent, expert multidisciplinary medical services while preparing for and competing at MSMG and they work with MGC to complete this successfully.

The MGC created an internal portal for all affiliated medical practitioners to submit an application for MSMG volunteering. Through the expert groups, or professional associations as referred to in this study, there is an annual call that goes out to practitioners that directs them to the portal. This system was established to ensure fairness and consistency across all professions and ensure the most well rounded and multidisciplinary core medical team (L. Lafrenière, personal communication, February 25, 2022). All applicants include their field and clinical experience along with any additional training or education they have completed. Once applications are received, they are reviewed by their professional association, a short list is created, and that is shared with MGC for final review with input from the franchise holder (L. Lafrenière,

personal communication, February 25, 2022). A MSMG Chief Medical Officer (CMO) is selected first, then the Chief Therapist (CT), the Chief Nurse (CN), and finally team members of the Canadian Core Medical Team (L. Lafrenière, personal communication, February 25, 2022).

2.7 Research on medical volunteers

Research on medical volunteers and their experiences at MSMG is limited, with the bulk of the literature focusing on the epidemiology of injuries and best practices for medical management. Some researchers have explored the benefits and costs associated with medical volunteers contributing their time and skills in different environments. Benda (1991) discussed benefits to volunteering on the sidelines as a physician in a community, including providing services to the kids that they may otherwise not have access to, personal emotional gain, athletes, coaches, and parents feeling supported and feeling there is an added element of safety, and contributing to professional practice growth. Sawyer and Lopopolo (2004) noted how a group of physiotherapy students experienced an expanded view of the world and their profession following a one-week clinical education experience in Jamaica. The authors also noted the students' gained knowledge, confidence, independence, and an improvement in their communication skills. Campbell et al. (2009) reported that volunteering for short-term medical missions can have a positive impact on reducing burnout among professionals suffering from moderate levels of burnout (emotional exhaustion (EE), a sense of depersonalization (DP), and a lack of personal accomplishment (PAs) (Maslach et al., 1996)) at work. In a study of five physiotherapy students, Humphreys and Carpenter (2010) found that volunteering in underdeveloped countries had a positive impact on both themselves as individuals and on the community in which they volunteered. The physiotherapy students discovered an appreciation for their own local health system, recognized a human duty within themselves, highlighted a passion for their profession, and gained new skills. The volunteers also felt they contributed to positive change and a lasting impact to the community, they passed on skills, and provided further education and training. Ali et al. (2021) studied 26 medical student volunteers working with COVID-19 patients on a ventilator in the midst of the pandemic. The results showed the value to the student

volunteers of working with a team of multi-disciplinary practitioners. Their experience provided them with a better understanding of different roles involved in patient care and, in some cases, helped uncover different career paths. Communication, teamwork, compassion, and altruism were also noted as improved as a result of volunteering (Ali et al. 2021).

While a number of benefits have been identified in studies of medical volunteers, there are some costs associated as well. Benda (1991) acknowledged additional time demands on the physician volunteers in their study, additional tasks outside of sideline coverage such as pre-participation exams, potential for conflict with parents and coaches, and risk of malpractice litigation. Humphreys and Carpenter (2010) discussed some challenges experienced by their participants such as language barriers, lack of resources, cultural attitudes or stigmas, and poverty. They also noted some culture shock and a need to think outside the box. Finally, Ali et al. (2021) reported elevated levels of stress from the fear of contracting and transmitting SARS-CoV-2 to family and friends, increased levels of moral anguish, isolation, barriers created by PPE, stigmatisation, additional workload, and an increased risk in developing post-traumatic stress disorder. While these studied did not consider the MSMG context, they provide insight to the experienced benefits and costs associated with volunteering as a medical practitioner.

Reeser et al.'s (2005) study on motivational influences and factors impacting overall satisfaction among polyclinic volunteers at the 2002 Winter Olympic Games appears to be the only investigation that focuses specifically on medical volunteers at MSMG. The authors determined that athlete appreciation, public recognition, and interpersonal relationships with both athletes and other practitioners were important factors impacting overall satisfaction of medical volunteers, and that 97% of medical volunteers would return in a similar capacity. One highlight of this study was the identification of differences between physician and non-physician (other medical practitioners) responses. Generally, physicians tended to be less satisfied with their experience than non-physicians, and non-physicians were more likely to utilize their experience at the games as a marketing tool for their professional practices (Reeser et al., 2005). Factors negatively impacting the medical volunteers' overall satisfaction included pre-game

communication and training, and housing/cost of living during the event (Reeser et al., 2005).

Further research is required to better understand the experienced benefits and costs of medical volunteers at MSMGs, and the impact of those benefits and costs on volunteers' satisfaction with the event and intent to volunteer again. Such knowledge can help sport event managers develop and ensure mutually beneficially medical volunteer roles and encourage medical professionals to continue to volunteer their time with these events. The research to date has provided some important insight into the general volunteer population at MSMG; however, there is a gap in knowledge regarding medical volunteers and whether they perceive the same benefits and costs as the general population of volunteers or whether there are different factors to consider with this group of volunteers.

2.8 Theoretical Framework

Following Doherty's (2009) study of 2001 Jeux du Canada Games volunteers in general, the current study is also framed by social exchange theory. George Homans pioneered the social exchange theory, describing relationships as a series of behaviors motivated by results; that people start and maintain relationships that maximize rewards and limit costs (Homans, 1961). Thus, social exchange theory contends that the exchange of activity between two or more parties is based on tangible and/or intangible rewards and costs (Blau, 1964; Homans, 1961; Homans, 1958; Molm, 1994; Thibault & Kelley, 1959). If the parties perceive the relationship as equitable – that the rewards and costs are equal between both parties, after weighing the benefits versus costs – the relationship will continue (Guillet et al., 2002). The theory may also be used to predict or explain the behaviour of one of the parties: if an individual perceives that the benefits equal or outweigh the costs of being involved in a relationship, the individual is likely to continue. On that basis, the current study aims to describe the perceived rewards or benefits and costs of medical volunteers' engagement with MSMG; what drives their engagement, and what detracts from that. The impact of those benefits and costs for medical volunteers' satisfaction with the activity, and their intention to volunteer for another event (Homans, 1974), are also considered. The findings will provide needed insight to the nature of medical professionals' exchange of their time to volunteer with MSMGs. Similarities

and/or differences between medical volunteers and the general sport event volunteer population will be discussed.

3 Method

3.1 Participants and Procedure

This study comprised a sample of Canadian medical volunteers who participated in at least one MSMG in the past six years (January 1st, 2017 – December 31st, 202 2). Events eligible for this study were the Olympic Games, Pan American Games, Youth Olympic Games, Paralympic Games, ParaPan American Games, Commonwealth Games, Jeux de la Francophonie, Universiade (FISU), and Jeux du Canada Games. These games were selected because of their consistent recruitment and selection practices across all medical professions. The time period was selected to focus on a recent narrow time frame to enhance the ability of participants to recall their experience while ensuring at least one of each games is included. The Dakar 2022 Youth Olympic Games were not included as they were postponed to 2026 due to the global health crisis (Goh, 2022). Medical volunteers included active members of the Canadian Academy of Sport and Exercise Medicine (CASEM-ACMSE); the Royal College of Chiropractic Sport Sciences (Canada) (RCCSS(C)); Sport Physiotherapy Canada (SPC); the Canadian Athletic Therapists Association (CATA), and the Canadian Sport Massage Therapists Association (CSMTA).

Approval for the study was secured from the Non-Medical Research Ethics Board at Western University (see Appendix D). Prospective study participants were contacted directly by their professional association (CASEM-ACMSE, RCCSS(C), SPC, CATA and CSMTA) with a message from the investigators inviting them to participate in a one-time, anonymous, online survey. Interested individuals could click on a link in the message taking them directly to the participant letter of information (see Appendix E) and survey (see Appendix F) in Qualtrics. The letter of information and survey were available in English and French. At the end of the survey, participants were directed to a separate page where they could enter a draw for a chance to win one of five $25 Amazon Canada gift card. Of the five professional associations, four distributed the link to the letter of information and the online survey via e-mail to their members, with a follow up e-mail two weeks after the initial message. The remaining professional association included the link in their monthly newsletter.

A total of 78 medical volunteers completed the online survey. Most participants (77) completed the online survey in English, with one person completing it in French. The population of medical practitioners that were eligible for the study (i.e., MSMG medical volunteers between 2017 and 2022) is unknown, and so determination of the response rate is not possible. However, the sample comprised medical volunteers from each profession. There was a total of 14 (17.9%) Sport Medicine Physicians, 8 (10.3%) Sport Chiropractors, 7 (9.0%) Sport Physiotherapists, 38 (48.7%) Certified Athletic Therapists, and 11 (14.1%) Sport Massage Therapists. Of the respondents, 50 (64.1%) identified as women and 28 (35.9%) as men and ranged from 27 to 75 years of age (M = 43.49, SD = 10.20). Study participants were asked to refer to the time of their most recent MSMG volunteering (as some would have volunteered more than once). Most participants (71, 91%) were working full time when they volunteered for their most recent event, while 6 (7.7%) were working part time and 1 (1.3%) was unemployed at the time they volunteered. At the time of volunteering, the medical practitioners were mostly employed in private clinics (51, 65.4%) and universities or colleges (17, 21.8%), with the rest (10, 12.9%) employed or engaged in a range of settings (i.e., hospitals, polyclinic, secondary schools or were enrolled as full-time students). About two-thirds of respondents (51, 65.4%) were married or living with a partner during the time they volunteered and over a third (31, 39.8%) reported having dependents; 26 (33.3%) were single and 46 (59%) had no dependents.

The study participants were engaged in a variety of MSMG. Their most recent MSMG involvement, which was the frame of reference for the survey responses, were Olympic Games (Summer / Winter) (n = 12, 15.4%), Pan American Games (n = 1, 1.3%), Youth Olympic Games (Winter) (n = 1, 1.3%), Paralympic Games (Summer / Winter) (n = 5, 6.4%), ParaPan American Games (n = 1, 1.3%), Commonwealth Games (n = 6, 7.7%), Youth Commonwealth Games (n = 1, 1.3%), Universiade (Summer / Winter) (n = 9, 11.5%) and Jeux du Canada Games (Summer / Winter) (n = 39, 50%). Half of the participants (n = 41, 52.6%) volunteered as core medical, with 23 (29.5%) volunteering as host medical and 14 (17.9%) volunteering as team medical. Almost half of the respondents (n = 38, 48.7%) participated at more than one MSMG with a select few (n = 2, 2.6%) having volunteered with at least six MSMG. Finally, one-third (n = 52, 66.7%)

of the participants heard about the volunteer opportunity via their professional association whereas the remaining third heard about it through other means such as colleague or friend.

3.2 Instrument

The survey was adapted from Doherty's (2009) study of Jeux du Canada Games volunteers in one community to be more specific to medical practitioners at MSMG. Doherty's (2009) study comprised a post-event survey with the goal of understanding the general volunteers' experienced benefits and costs, and their intent to volunteer again in the future. The current study adapted the post-event survey specifically to the medical volunteer cohort to describe their experienced benefits, costs, satisfaction, and intent to volunteer again. The survey captured background information in Section A, experiences (benefits and costs) in section B, satisfaction in section C, and future intentions to volunteer again in section D (see Appendix F).

3.2.1 Background

Background information was collected in Section A to describe the demographic profile of the respondents. Respondents were asked to indicate their gender, current age, professional designation(s), year of certification, and MSMG volunteering experience(s) including event name, year, and medical role. Section A also requested information on their employment status, their work setting, marital status, whether they had dependents at the time of their most recent MSMG volunteering and how they heard of the MSMG volunteer opportunity. This information allows the development of a profile of survey respondents and enables the consideration of variation in experienced benefits and costs, and intentions to volunteer again.

3.2.2 Experiences

Perceived benefits and costs were measured using a Likert scale ranging from 1 (completely disagree) to 4 (neither agree nor disagree) to 7 (completely agree). Both the benefits and costs factors and their items were adopted from the Doherty (2009) post-event survey of the 2001 Jeux du Canada Games. Some items, and one factor, were

adapted to suit the medical volunteer cohort in the context of MSMG. These adaptations were informed by the lead investigator (Certified Athletic Therapist) and advisory committee member (Physiotherapist) and the medical volunteer literature noted earlier.

The original benefits factors from Doherty (2009) included community contribution (8 items), skill enrichment (4 items), connection with sport (4 items), privileges of volunteering (5 items), positive life experience (3 items), and social enrichment (3 items). To focus on the medical volunteers specifically, community contribution was adapted to event contribution and three of the five items were rephrased, and professional enrichment (5 items) was added. Items that were eliminated in the Doherty (2009) analysis – "I felt better about myself," "it was a memorable experience," and "I had access to event information before the general public" – were reintegrated to the survey in the current study for exploratory purposes. A total of 32 benefits items were included.

The original costs factors included task overload (5 items), personal inconvenience (4 items), task underload (4 items), and lack of ability (3 items). No adaptations to the medical volunteer context were required. The item "it required a substantial time commitment" was eliminated in the Doherty (2009) analysis but was retained in the survey for this study. A total of 17 costs items were included.

Open ended questions were included at the end of the benefits and costs sections, asking (and allowing) participants who volunteered during the COVID-19 pandemic to describe any particular benefits or costs associated with that experience.

3.2.3 Volunteer Satisfaction

Section C measured medical volunteers' satisfaction with various aspects of the most recent MSMG at which they volunteered. Aspects included their volunteer assignments, their uniform, their supervisor, as well as their overall satisfaction with the games. Original factors adopted from the Doherty (2003) survey were overall satisfaction (1 item), working environment (7 items), assignment (5 items), and services for volunteers (4 items). Two additional items were included: "medical supplies provided to complete my tasks" and "communication regarding changes to the daily schedule (e.g., volunteer

absence, break times etc.). A 7-point Likert - scale ranging from 1 (Very Dissatisfied) to 4 (Neither Satisfied nor Dissatisfied) to 7 (Very Satisfied) was used to measure the participants' satisfaction with each item.

3.2.4 Future Volunteer Intentions

Section D measured the likelihood that the participants would volunteer for another MSMG in their community, in their province/territory, in Canada or internationally. The items were adapted from Doherty (2009). The survey comprised one item for each, measured on a Likert-type scale from 1 (definitely would not volunteer) to 7 (definitely would volunteer).

3.3 Data Analysis

In a first step, the data were checked for missing cases and missing values. It was determined that 77 cases from the original sample of 155 respondents, were missing at least 5%, and often more, of their data, and in a non-random pattern. These were deemed incomplete cases and deleted (Tabachnick & Fidell, 2019). There was minimal missing data (<1% and random) within the remaining cases, and thus those cases were retained, and mean substitution was used to impute the missing data for a final sample size of 78 (Tabachnick & Fidell, 2019).

Descriptive statistics were used to generate a profile of the medical volunteer participants in the final sample. It was important to assess the factor structure and psychometric properties of the experiences (benefits, costs) and satisfaction items (adopted and adapted from Doherty, 2003, 2009) in the medical volunteer context of the current study. Principal Component Analysis – Exploratory (PCA-E) with varimax rotation was conducted to determine whether the benefits, costs and satisfaction items could be reduced, respectively, to more manageable and statistically accurate factors. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was checked before interpreting each PCA-E. A KMO value greater than .60 is considered acceptable (Tabachnick & Fidell, 2019). Varimax rotation is the most commonly used method of rotation and was used here with the goal of maximizing the variance within each factor loading for easier interpretation (Tabachnick & Fidell, 2019). Factors with eigenvalues greater than 1.0

were interpreted (Tabachnick & Fidell, 2019). Any items that loaded higher than .40 on a given factor were retained; however, if an item loaded on multiple factors a difference between the factor loadings of less than .01 resulted in elimination of the item (Stevens, 2009). The Cronbach alpha was calculated to assess the reliability of the items within each factor, with a value in the range of .80 deemed acceptable (Lance et al., 2006), and between .70 and .80 considered reasonable (DeVellis, 2012). Scale intercorrelations among the factors for each of benefits, costs and satisfaction were also performed to verify the factor structure. Bivariate scale intercorrelations should not exceed .90 as this would suggest a problem with multicollinearity (Tabachnick & Fidell, 2019).

Once the structure of the factors was determined, repeated measures (or within-subjects) ANOVAs, with Bonferroni post hoc analysis, were conducted to determine what the participants experienced as the greatest benefits and greatest costs, and most satisfying (and dissatisfying) aspects of their medical volunteering. One-way MANOVAs were used to assess variation in perceived benefits, costs and satisfaction by medical profession and volunteer role. There was insufficient power to analyze and interpret the findings of any of the tests (observed power <.80; Tabachnick & Fidell, 2019), however, a review of the descriptive results was provided. In order to retain power, a series of separate regression analyses were conducted for overall satisfaction and benefits, costs and games satisfaction, and future intentions and benefits, costs and games satisfaction (three models for each outcome). The significance level was adjusted (.05/3 = .017) to reduce the risk of Type 1 error for the overall satisfaction models and the future intentions models. Linear regression analyses were conducted to identify benefits and costs that contribute to the prediction of overall satisfaction with volunteering, and to future intentions to volunteer at another MSMG in their community, their province/territory, or within Canada.

4 Results

4.1 Psychometric properties of benefits, costs, and satisfaction scales

4.1.1 Experienced Benefits

The sampling size for the PCA-E was acceptable (KMO = .83) and thus appropriate for analysis. Six factors were identified with eigenvalues above 1.0 and items loading at least .40 on a single factor (see Table 1). These benefits were labelled: Professional Identification (8 items), Professional Development (7 items), Positive Life Experience (4 items), Privileges (3 items), Event Contribution (3 items) and Networking (2 items). Two items, “I worked with different people” and ‘I made new friends,” were removed from professional development and event contributions respectively, due to a load higher than .40 on multiple factors with the difference being less than .10. Two items, “I worked with medical practitioners from different countries” and “I mingled with athletes,” were removed because they loaded together as a two-item factor and did not make theoretical sense. Nunally and Bernstein (1994) argue that researchers have the responsibility to ensure each factor makes theoretical sense. Finally, one item, “I was ‘behind the scene’ at the games” was removed due to it being the only item that loaded under a specific factor. A total of 27 benefits items remained following the PCA-E.

The Cronbach alpha values of the factors were above .70 and considered reasonable (Tabachnick & Fidell, 2019). One two-item factor – Networking - was observed, which Tabachnick and Fidell (2019) note can be a limitation. However, the Cronbach alpha value was above .70, and the factor correlated less than .45 with the other factors, demonstrating the reasonable reliability and acceptable independence of the two-item factor. Further, the conceptual interpretability of the factor was strong (Nunally & Bernstein, 1994) and so it was retained. Finally, the scale intercorrelation results indicated no values above .65 within the benefit factors, confirming their independence (Tabachnick & Fidell, 2019).

Table 1 Rotated Component Matrix representing factor loadings for benefits.

	Factor					
	1	2	3	4	5	6
1. Professional Identification						
I helped create a better experience for the athletes	.77					
My skills were needed	.78					
I did something to help the athletes perform well	.75					
I was able to use my knowledge, experience, skills, and abilities	.75					
I did something worthwhile for the event	.67					
I saw elite athletes	.62					
I met new medical practitioners with varying skills	.58					
It was a memorable experience	.58					
2. Professional Development						
I acquired and developed new skills		.74				
I broadened my horizons		.73				
Being a Games volunteer was prestigious		.71				
I gained some practical experience		.70				
I developed a greater understanding/appreciation for sports		.64				
I felt better about myself		.59				
I built or strengthened my professional network		.52				
3. Positive Life Experience						
I watched some of the events while working			.75			
I did something different and varied my regular activities			.75			
I interacted with other volunteers			.67			
I worked at a preferred venue/event			.62			
4. Privileges						
I had access to places denied to the general public				.80		
I got free souvenirs/memorabilia				.73		
I had access to event information before the general public				.65		
5. Event Contribution						
I helped make the Games a success					.66	
I contributed to volunteer team spirit					.66	
I helped strengthen the image of the event					.62	
6. Networking						
I reunited with past colleagues						.84
I worked with colleagues from different areas of Canada						.78
Cronbach α	.91	.88	.79	.83	.78	.72
Eigenvalue	5.28	4.60	3.01	3.00	2.20	2.00
Percent variance	16.50	14.40	9.40	9.32	6.90	6.10
M	6.30	5.60	5.70	5.50	5.50	6.12
(SD)	(.83)	(1.03)	(1.12)	(1.44)	(1.10)	(1.31)

Loadings < .4 are suppressed. N = 77; M = mean; SD = standard deviation

Experienced Costs

The sampling size for the PCA-E was acceptable (KMO = .81). Four factors were identified with eigenvalues above 1.0 and items loading at least .40 on a single factor (see Table 2). These costs factors were labelled: Task Overload (3 items), Lack of Ability (3 items), Unreasonable Expectations (2 items), and Personal inconvenience (3 items). Four items (“No one provided guidance or support to help me do my tasks,” “I was given too much to do,” “I felt undervalued as a volunteer,” “I was assigned boring tasks”) were removed due to loading on multiple factors. One item, “I was given too little to do,” was

the sole item to load under the last factor and therefore the item and the factor were removed. A total of 11 items remained following the PCA-E.

The Cronbach alpha values of the factors were mostly above .70 and thus reasonable (Tabachnick & Fidell, 2019) with one (Personal inconvenience) falling just below at .67. Given that time involved has been identified elsewhere (Doherty, 2009) as a key cost for sport event volunteers, and thus it was decided to continue to include this factor however proceeded with caution in further analyses. One two-item factor was identified with costs – Unreasonable Expectations – with a Cronbach alpha value above .70. The factor correlated less than .45 with the other factors, again demonstrating its reasonable reliability and acceptable independence. The conceptual interpretability of the factor was strong (Nunally & Bernstein, 1994) and so it was retained. The scale intercorrelation

results indicated no values above .55 within the cost factors, confirming their independence (Tabachnick & Fidell, 2019).

Table 2 Rotated Component Matrix representing factor loadings for costs.

	Factor			
	1	2	3	4
1. Task Overload				
There were not enough other volunteers to help me do my tasks well	.77			
There was undue pressure on me to perform my tasks well	.76			
I felt taken advantage of by more senior volunteers	.74			
2. Lack of Ability				
I did not have the confidence to be able to do my tasks		.81		
I did not receive adequate training for my assignment		.79		
I did not have the knowledge or skills to be able to do my tasks		.78		
3. Unreasonable Expectations				
I felt taken advantage of by paid staff			.80	
It required undue personal expense (out of my own pocket)			.76	
4. Personal Inconvenience				
It was inconvenient for my family/work responsibilities				.83
It was inconvenient to my vacation time				.79
It required a substantial time commitment				.59
Cronbach a	.80	.84	.72	.67
Eigenvalue	3.02	2.94	2.40	1.92
Percent variance	17.80	17.31	14.20	11.30
M	2.00	1.83	3.50	4.60
(SD)	(1.22)	(1.14)	(1.73)	(1.42)

Loadings < .4 are suppressed. N = 78; M = mean; SD = standard deviation

4.1.2 Satisfaction

The sampling size for the PCA-E was also acceptable (KMO = .84). Four factors were identified with eigenvalues above 1.0 from the PCA-E: Daily Logistics (3 items), Volunteer Context (3 items), Volunteer Management (6 items), and Task Support (2 items). There were three items dropped due to double loading under multiple factors ("Safety of the working environment," "The volunteer uniform," and "Schedule I was assigned to work") and one item ("Time commitment involved") dropped due to being the only item to load under one of the factors, in which case both the item and the factor were dropped. Fourteen items remained following the PCA-E.

The Cronbach alpha values of the factors were above .70 and thus reasonable (Tabachnick & Fidell, 2019). One two-item factor was identified – Task Support – with a Cronbach alpha value of .70. The factor correlated less than .45 with the other factors, again demonstrating the reliability and independence of the two-item factor. The conceptual interpretability of the factor was also strong (Nunally & Bernstein, 1994) and so it was retained. Finally, the scale intercorrelation results indicated no values above .65 within the satisfaction factors, confirming their independence (Tabachnick & Fidell, 2019).

Table 3 Rotated Component Matrix representing factor loadings for satisfaction.

	Factor			
	1	2	3	4
1. Daily Logistics				
Rest breaks during my shift(s)	.90			
Comfort of the working environment	.75			
Communication regarding changes to the daily schedule (e.g., volunteer absences, break times etc.)	.63			
2. Volunteer Context				
Venue(s) to which I was assigned		.79		
My volunteer assignment(s)		.74		
My venue team/co- workers		.57		
3. Volunteer Management				
Parking/transportation for volunteers			.73	
Recognition for my volunteer contributions			.65	
Food services for volunteers			.64	
Training I received			.60	
Organization of medical volunteers for the Games			.58	
Guidance and support to help me do my tasks			.54	
4. Task Support				
Medical supplies provided to complete my tasks				.88
My supervisor				.74
Cronbach α	.72	.82	.84	.70
Eigenvalue	3.10	3.10	2.80	2.10
Percent variance	17.20	17.00	15.50	11.61
M	6.20	5.50	5.20	6.01
(SD)	(.75)	(1.23)	(1.12)	(1.10)

Loadings < .4 are suppressed. N = 74; M = mean; SD = standard deviation

4.2 Perceived Benefits of Medical Volunteering

Results of the repeated-measures ANOVA revealed a significant difference among the perceived benefits of volunteering $F(5,72) = 18.03$, $p<.001$, with observed power of 1.0. Post hoc Bonferroni analysis revealed that professional identification ($M = 6.27$, $SD = .83$) and networking ($M = 6.12$, $SD = 1.31$) were perceived by the medical volunteers to be the greatest benefits of their involvement and did not significantly differ. These benefits were significantly greater ($p < .05$) than positive life experience ($M = 5.69$, $SD = 1.12$), professional development ($M = 5.58$, $SD = 1.03$), privileges ($M = 5.45$, $SD = 1.44$), and event contribution ($M = 5.45$, $SD = 1.10$), which did not differ.

One-way MANOVAs were conducted to determine whether there was any variation in perceived benefits of volunteering by type of medical profession and medical role at the MSMG. There was insufficient power to interpret the findings. However, a review of the descriptive results (see Appendix C) suggests few differences in perceived benefits across professional designations and medical role. Exceptions are Sport Medicine Physicians appeared to indicate a lesser overall benefit of professional identification ($M = 5.95$, $SD = 1.42$), positive life experience ($M = 5.30$, $SD = 1.84$), and privileges ($M = 5.07$, $SD = 1.91$) with medical volunteering in comparison to other practitioners. Sport Chiropractors ($M = 5.89$, $SD = 1.00$) and Sport Massage Therapists ($M = 5.94$, $SD = .94$) appeared to experience greater professional development than other practitioners and Sport Medicine Physicians ($M = 6.25$, $SD = 1.42$), Sport Physiotherapists ($M = 6.86$, $SD = .24$) and Certified Athletic Therapists ($M = 6.12$, $SD = 1.10$) appeared to experience networking to a greater extent than Sport Chiropractors ($M = 5.56$, $SD = 2.08$) and Sport Massage Therapists ($M = 5.86$, $SD = 1.50$). Team medical appears to have experienced a marginally greater positive life experience ($M = 5.90$, $SD = .30$) and privileges ($M = 5.90$, $SD = .38$) then core and host medical. Core medical appears to have experienced networking to a greater extent ($M = 6.6.41$, $SD = .20$) than host and team medical. However, it was not possible to determine whether these apparent differences were significant.

A total of 18 participants reported particular benefits experienced as a result of volunteering at a MSMG during the COVID-19 pandemic. Benefits included being able to travel again, witnessing athletes interacting with other athletes again, integrating remote support for teams and staff, early access to vaccines, and learning about COVID-19 and the policies and processes behind organizing a large-scale event during a global pandemic.

4.3 Perceived Costs of Medical Volunteering

Results of the repeated-measures ANOVA revealed a significant difference among the perceived costs of volunteering $F(3,75) = 86.13$, $p<.001$, with observed power of 1.0. Post hoc Bonferroni analysis revealed that Personal inconvenience ($M = 4.59$, $SD = 1.42$) was perceived to be the greatest cost to medical volunteering, and significantly greater ($p < .05$) than unreasonable expectations ($M = 3.46$, $SD = 1.73$) which was significantly greater than the remaining costs of task overload ($M = 2.00$, $SD = 1.22$) and lack of ability ($M = 1.83$, $SD = 1.14$) which were quite minimal.

As with perceived benefits, there was insufficient power to interpret the analysis of variation in perceived costs by medical profession and medical role. However, a review of the descriptive results (see Appendix C) suggests few differences in perceived costs across professional designations and medical role. Exceptions are Sport Medicine Physicians appeared to experience task overload ($M = 2.14$, $SD = 1.23$) and unreasonable expectations ($M = 4.21$, $SD = 1.85$) to a greater extent than their colleagues, with Certified Athletic Therapists experiencing lack of ability ($M = 2.01$, $SD = 1.31$) to a marginally greater extent than colleagues. Team medical appears to have experienced greater task overload ($M = 2.29$, $SD = .33$) than core medical ($M = 2.00$, $SD = .19$) who experienced more than host medical ($M = 1.81$, $SD = 26$). However, it was not possible to determine whether these differences were significant.

A total of 20 participants reported particular costs experienced as a result of volunteering during the COVID-19 pandemic. Costs included challenges with travel, additional responsibility related to COVID-19 protocols, limited number of volunteers on site to

provide care, additional risk of spreading COVID-19 or bringing it home to friends and family, feeling confined to certain facilities and not getting to experience various venues or even the host community and culture, quick turnaround following athletes' events with the requirement to vacate 24-48 hours after their event, and increased level of stress.

4.4 Satisfaction with Medical Volunteering

Results of the repeated measures ANOVA revealed a significant difference in the medical volunteers' satisfaction with various aspects of their MSMG experience $F(3,71) = 30.87$, $p<.001$, with observed power of 1.0. Post hoc Bonferroni analysis revealed that participants were most satisfied with the daily logistics ($M = 6.15$, $SD = .75$) and task support ($M = 6.01$, $SD = 1.05$) they experienced, which did not differ, and which were significantly more satisfying ($p < .05$) than volunteer context ($M = 5.50$, $SD = 1.23$) and volunteer management ($M = 5.16$, $SD = 1.12$).

As with perceived benefits and costs, there was insufficient power to interpret the analysis of variation in satisfaction by medical profession and medical role. However, a review of the descriptive results (see Appendix C) suggests few differences in satisfaction across professional designations and medical role. Nonetheless, Sport Medicine Physicians appeared to be less satisfied with the volunteer context ($M = 5.00$, $SD = 1.25$) and volunteer management ($M = 4.85$, $SD = 1.12$) than other medical practitioners, whereas Sport Massage Therapists were less satisfied with daily logistics ($M = 5.94$, $SD = .93$) than their colleagues. Team medical volunteers appeared to experience less satisfaction with task support ($M = 5.63$, $SD = .30$) than core and host medical. However, again it was not possible to determine whether these differences were significant.

The medical volunteers in this study were, overall, highly satisfied with their MSMG experience ($M = 6.04$, $SD = 1.00$). Overall satisfaction was regressed on each of the benefits, costs and satisfaction factors in separate standard linear regression analyses. An adjusted p-value of .017 was used to account for the three sets of analyses (.05/3) For perceived benefits (see Table 4) the full model accounted for 18% of the variance in overall satisfaction ($p<.017$). Professional development was the only significant contributor to overall satisfaction ($\beta = .44$, $p<.05$), demonstrating unique variance over

and above the contribution of the other benefits. For perceived costs (see Table 4), the full model accounted for 15% of the variance in overall satisfaction (p<.017) and unreasonable expectations was the only unique contributor to overall satisfaction (β = -.28, p<.05). For satisfaction with various aspects, the full model accounted for 31% of the variance in overall satisfaction (p<.017) and daily logistics (β = .29, p<.05) and volunteer management (β = .32, p<.05) were the two factors that contributed to overall satisfaction.

Table 4 Results of linear regression analysis for benefits, costs and satisfaction predicting overall satisfaction.

	Overall Satisfaction			
Benefits	B	SE	β	t
Professional Identification	.04	.21	.03	.17
Professional Development	.42	.15	.44*	2.77
Positive Life Experience	.14	.12	.16	1.21
Privileges	-.07	.10	-.91	-.65
Event Contribution	.05	.14	.05	.34
Networking	-.10	.11	-.11	-.88
F	3.58**			
R^2	.18			
N	77			
Costs	B	SE	β	t
Task Overload	-.13	.11	-.16	-1.20
Lack of Ability	.01	.11	.01	.08
Unreasonable Expectations	-.16	.07	-.28*	-2.25
Personal Inconvenience	-.10	.09	-.14	-1.18
F	4.29**			
R^2	.15			
N	78			
Satisfaction	B	SE	β	t
Daily Logistics	.38	.18	.29*	2.27
Volunteer Context	.08	.10	.09	.76
Volunteer Management	.29	.12	.32*	2.31
Task Support	-.04	.11	-.04	-.35
F	9.01**			
R^2	.31			
N	78			

**p < .017; *p < .05.

4.5 Future Intentions for Medical Volunteering

Participants indicated they were quite likely to volunteer for another MSMG if it was in their own community (M = 6.30, SD = 1.21) but less likely to volunteer in their own province/territory (M = 6.05, SD = 1.30) or within Canada at large (M = 5.90, SD = 1.45). The likelihood to volunteer at another MSMG hosted in their community was regressed on each of the benefits, costs and satisfaction factors in separate standard linear

regression analyses. An adjusted *p*-value of .017 was used to account for the three sets of analyses (.05/3). For perceived benefits (see Table 5) the full model accounted for 18% of the variance in intent to volunteer again for another MSMG hosted in their community ($p<.017$). Professional development was the only unique significant contributor ($\beta = .64$, $p<.05$). For perceived costs (see Table 5), the full model accounted for 3% of the variance in intent to volunteer again for another MSMG hosted in their community ($p<.017$). For satisfaction (see Table 5) with various aspects, the full model accounted for 7% of the variance in intent to volunteer for another MSMG hosted in their community ($p<.017$) and volunteer management was the only unique contributing factor to intent to volunteer for another MSMG hosted in their community ($\beta = .43$, $p<.05$).

Table 5 Results of linear regression analysis for benefits, costs and satisfaction predicting intent to volunteer again for another MSMG hosted in their community.

	Intent to Volunteer Again in their Community			
Benefits	B	SE	β	t
Professional Identification	-.11	.25	-.07	-.43
Professional Development	.75	.18	.64*	4.06
Positive Life Experience	-.09	.14	-.09	-.65
Privileges	-.06	.12	-.07	-.51
Event Contribution	-.27	.17	-.24	-1.59
Networking	.16	.14	.15	1.19
F	3.65**			
R^2	.25			
N	77			
Costs	B	SE	β	t
Task Overload	.09	.14	.09	.66
Lack of Ability	-.16	.14	-.15	-1.11
Unreasonable Expectations	-.10	.09	-.14	-1.05
Personal Inconvenience	-.15	.11	-.17	-1.30
F	1.53**			
R^2	.03			
N	78			
Satisfaction	B	SE	β	t
Daily Logistics	-.13	.24	-.08	-.56
Volunteer Context	-.07	.14	-.07	-.48
Volunteer Management	.46	.17	.43*	2.65
Task Support	-.02	.15	-.02	-.15
F	2.29**			
R^2	.07			
N	78			

$^{**}p < .017$; $^{*}p < .05$.

The likelihood to volunteer at another MSMG hosted in their Province/Territory was regressed on each of the benefits, costs and satisfaction factors in separate standard linear

regression analyses. An adjusted *p*-value of .017 was used to account for the three sets of analyses (.05/3). For perceived benefits (see Table 6) the full model accounted for 13% of the variance in intent to volunteer again for another MSMG hosted in their Province/Territory ($p<.017$). Professional development was the only unique significant contributor ($\beta = .58$, $p<.05$). For perceived costs (see Table 6), the full model accounted for 9% of the variance in intent to volunteer again for another MSMG hosted in their Province/Territory ($p<.017$). For satisfaction (see Table 6) with various aspects, the full model accounted for 15% of the variance in intent to volunteer for another MSMG hosted in their Province/Territory ($p<.017$) and volunteer management was the only unique contributing factor to intent to volunteer for another MSMG hosted in their Province/Territory ($\beta = .55$, $p<.05$).

Table 6 Results of linear regression analysis for benefits, costs and satisfaction predicting intent to volunteer again for another MSMG hosted in their Province/Territory.

	Intent to Volunteer Again in their Province/Territory			
Benefits	B	SE	β	t
Professional Identification	-.11	.27	-.07	-.41
Professional Development	.71	.20	.58*	3.58
Positive Life Experience	.05	.15	.04	.30
Privileges	-.17	.13	-.19	-1.29
Event Contribution	-.18	.18	-.15	-.97
Networking	.10	.15	.09	.67
F	2.74**			
R^2	.13			
N	77			
Costs	B	SE	β	t
Task Overload	.16	.14	.16	1.15
Lack of Ability	-.23	.14	-.20	-1.58
Unreasonable Expectations	-.12	.10	-.17	-1.31
Personal Inconvenience	-.21	.11	-.23	-1.90
F	2.80**			
R^2	.09			
N	78			
Satisfaction	B	SE	β	t
Daily Logistics	-.01	.24	-.01	-.06
Volunteer Context	-.26	.14	-.25	-1.82
Volunteer Management	.63	.17	.55*	3.61
Task Support	-.05	.15	-.04	-.35
F	4.14**			
R^2	.15			
N	78			

**$p < .017$; *$p < .05$.

The likelihood to volunteer at another MSMG hosted anywhere in Canada was regressed on each of the benefits, costs and satisfaction factors in separate standard linear regression analyses. An adjusted *p*-value of .017 was used to account for the three sets of analyses (.05/3). For perceived benefits (see Table 7) the full model accounted for 18% of the variance in intent to volunteer again for another MSMG hosted anywhere in Canada ($p<.017$). Professional development was the only unique significant contributor ($\beta = .56$, $p<.05$). For perceived costs (see Table 7), the full model accounted for 3% of the variance in intent to volunteer again for another MSMG hosted anywhere in Canada ($p<.017$). For satisfaction (see Table 7) with various aspects, the full model accounted for 16% of the variance in intent to volunteer for another MSMG hosted anywhere in Canada ($p<.017$) and volunteer context ($\beta = -.30$, $p<.05$), and volunteer management ($\beta = .56$, $p<.05$) had a significant impact on a volunteer's intent to volunteer again at another MSMG hosted anywhere in Canada.

Table 7 Results of linear regression analysis for benefits, costs and satisfaction predicting intent to volunteer again for another MSMG hosted in Canada.

	Intent to Volunteer Again in Canada			
Benefits	B	SE	β	t
Professional Identification	-.23	.30	-.13	-.77
Professional Development	.78	.22	.56*	3.54
Positive Life Experience	.02	.17	.02	.11
Privileges	-.18	.15	-.17	-1.21
Event Contribution	-.12	.20	-.09	-.60
Networking	.32	.16	.25	1.94
F	3.64**			
R^2	.18			
N	77			
Costs	B	SE	β	t
Task Overload	.04	.17	.04	.25
Lack of Ability	-.25	.17	-.20	-1.49
Unreasonable Expectations	-.10	.11	-.12	-.91
Personal Inconvenience	-.09	.13	-.09	-.67
F	1.46**			
R^2	.03			
N	78			
Satisfaction	B	SE	β	t
Daily Logistics	.03	.27	.01	.09
Volunteer Context	-.35	.16	-.30*	-2.17
Volunteer Management	.69	.20	.54*	3.51
Task Support	.06	.17	.04	.33
F	4.45**			
R^2	.16			
N	78			

**$p < .017$; *$p < .05$.

5 Discussion

The identified factor structure of the measures of perceived benefits, costs, and satisfaction in the current study was well supported. It revealed some commonalities yet some differences between the sample of medical practitioners and previous research using the same measures with a broad sample of sport event volunteers (Doherty, 2009). For perceived benefits, three factors were retained from Doherty (2009) with the same (or similar) name and meaning: Event contribution, privileges and positive life experience. Event contribution (community contribution in Doherty, 2009) in both contexts, with general volunteers and the medical cohort, included their personal contribution to the event such as “I helped make the games a success” and “I strengthened the image of the event.” Privileges was retained in both studies and referred to items such as “I had access to the places denied to the general public” and “I got free souvenirs/memorabilia” as experienced benefits. Lastly, positive life experience was also retained in both studies, and while they both had similar meaning, items that contributed to their personal experience of the event, only one item remained in both factors: “I did something different and varied my regular activities.” The remaining items from Doherty (2009) original survey, “I developed a greater understanding/appreciation for sports” and “I broadened my horizon” loaded more significantly under professional development with the medical volunteer cohort. This current study included “I watched some of the events while working,” “I interacted with other volunteers,” and “I worked at a preferred venue/event” as items that loaded strongly with positive life experience. The remaining factors from Doherty (2009) ultimately loaded differently with the medical volunteer cohort. The original skill enrichment was divided into professional identification and professional development. The new factors loaded with items that were career specific. Professional identification included items that focused on volunteers’ professional skills and how they helped the event and the athletes, such as “My skills were needed” and “I helped create a better experience for the athletes.” Professional development included items that contributed to the medical volunteers’ career advancement such as “I built or strengthened my professional network” and “I gained some practical experience.” The original (Doherty, 2009) connection with sport and social enrichment factors were not directly supported in the current study with the majority of their associated items loading

into other more career focused factors, such as professional networking. This suggests that the medical volunteer cohort is more focused on the professional benefits that volunteering at a MSMG can provide. Doherty's (2009) experienced costs, on the other hand, were consistent with this current study. The original task overload, lack of ability, and personal inconvenience costs were supported with the same items. Task overload included items such as "there was undue pressure on me to perform my tasks well" and "there were not enough other volunteers to help me do my tasks well." Personal inconvenience included items such as "It was inconvenient for my family/work responsibilities" and "It was inconvenient to my vacation time." Lack of ability included items such as "I did not have the confidence to be able to do my tasks" and "I did not receive adequate training for my assignment." However, there was one factor that was removed and replaced with another in the current study. Task underload from Doherty (2009) was not supported and was replaced with unreasonable expectations, demonstrating that medical volunteers experienced being overworked and feeling taken advantage of at MSMG events.

Measures of satisfaction scale were not reported in Doherty (2009) study but was adopted and adapted from Doherty's (2003) original study report. The original Doherty (2003) included factors such as the working environment ("my venue team/co-workers" and "safety of the working environment"), assignment ("my volunteer assignment," "venues to which I was assigned"), services for volunteers ("parking/transportation" and "food services") and overall satisfaction ("overall experience"). The current study identified four satisfaction factors that cover a range of MSMG aspects: Daily Logistics, Volunteer Context, Volunteer Management, and Task Support. Volunteer context included items such as "Venues to which I was assigned," "my volunteer assignment," and "my venue team/co-workers." Daily logistics included specific daily organization such as "rest breaks during my shift," "comfort of the working environment," and "communication regarding changes to the daily schedule." Volunteer management approached satisfaction from a higher level and included items such as "organization of medical volunteers for the games" and "recognition of my volunteer contributions." Finally, task support included satisfaction of "my supervisor" and "medical supplies provided to complete my

tasks." Ultimately the items loaded quite differently than the original Doherty (2003) and thus were given more appropriate labels for this cohort of medical volunteers.

Regarding perceived benefits of MSMG volunteering, in previous research Doherty (2009) found that social enrichment from interacting with other volunteers was the greatest benefit among volunteers in general at the 2001 Jeux du Canada Summer Games, while South et al. (2020) found that increased social connections and networks was key for 2014 Glasgow Commonwealth Games volunteers. Elstad (1996) discovered that volunteers from the 1994 Olympic Games in Lillehammer experienced an improvement in social skills and an increase knowledge of society in general as experienced benefits from their volunteer role. All of which highlight the importance of the social aspect and community involvement/contribution that accompanies the experience of volunteers in general. However, it was discovered in the current study that the medical volunteers experienced professional identification and networking as the greatest benefits. Medical volunteers felt good about being able to provide the athletes with the specific skills they acquired through education and experience. They experienced great benefit in being able to help create a better experience for the athletes, being able to help the athletes perform well, provide a needed skill, and were able to use their knowledge, experience, skills and abilities in their volunteer role. This is in line with Zachazewski et al. (2012) who described the role of a medical practitioner as using their knowledge and expertise to assist the athletes and, when possible, support a safe return to play/competition following illness or injury. While there was an element of positive life experience for medical volunteers, it was more beneficial to them to be able to apply their knowledge and skills in this setting. Consistent with South et al. (2020), the current study reported networking as one of the greatest benefits among medical volunteers. However, in the context of South et al. (2020), the volunteers referred to more of a general social network whereas this current study identified more of a professional network. The medical volunteers valued reuniting with past colleagues and colleagues from different areas of Canada, again, highlighting the importance of the professional connection for medical volunteers. Medical volunteers experienced these benefits to a high degree (5.45 to 6.27 on a seven-point scale). These results are consistent with Benda (1991) who identified providing services to kids who may not otherwise have access to care and a personal emotional gain

as benefits physicians experience when working on community sport sidelines. However, most of the medical volunteer research thus far have highlighted benefits such as a physiotherapy student's expanded view of the world (Sawyer and Lopopolo, 2004), reducing burnout (Campbell et al., 2009), positive impact on themselves, gaining new skills (Humphreys and Carpenter, 2010), and helped uncover different career paths (Ali et al., 2021) which weren't identified by this group of medical volunteers at MSMG as one of their greatest experienced benefits. One major factor contributing to these differences is the context in which they volunteered, MSMG, which could be resulting in different experienced benefits for the same type of volunteer.

Differences in perceived benefits among medical professions and medical roles were unable to be analyzed due to insufficient power. However, there does appear to be some preliminary differences that could warrant further investigation. It appears that Sport Chiropractors and Sport Massage Therapists experienced professional development (a greater understanding/appreciation for sports, gained some practical experience and acquired and developed new skills) to a greater extent than the remaining practitioners. This could be a result of Sport Chiropractors and Sport Massage Therapists not having as much exposure to the MSMG field setting, working on the sidelines with teams/athletes, as the other professions. They often work closely with athletes in a clinical setting and may not have as much opportunity to work in the field. Sport Medicine Physicians, Sport Physiotherapists and Certified Athletic Therapists appear to have experienced networking to a greater extent than Sport Chiropractors and Sport Massage Therapists. This included reuniting with past colleagues and working with colleagues from different areas of Canada. Reeser et al. (2005) noted the importance of interpersonal relationships with both athletes and other practitioners and perhaps because of their reduced field exposure in comparison to the other medical practitioners, they may not actively seek networking opportunities like Sport Medicine Physicians, Sport Physiotherapists and Certified Athletic Therapists. Further, team medical volunteers appear to have benefited from positive life experience and privileges to a marginally greater extent than core and host medical. This could potentially be a result of being part of a team and are being seen as more of a guest at the event as opposed to the workforce. Team medical have a more flexible schedule than host and core. When their team/athlete is preparing for an event or

actively competing in an event, they are on, however, when their team has down time, they also have down time. This is in contrary to host and core who are scheduled for long daily shifts that don't fluctuate based on which event is happening. Team medical often receive similar benefits as the team/athlete they are accompanying such as the top gear and different accreditation that could offer them increased flexibility to move throughout the event. This does highlight potential differences in medical roles and warrants further investigation.

It has been identified that volunteers experience costs to a lesser extent than benefits (Doherty, 2009; South et al., 2020), which is consistent with social exchange theory premise that benefits must outweigh costs for individuals to engage in and continue their behavior (Homans, 1961). The current study strengthens this observation by identifying that the medical volunteers also experienced costs to a lesser extent than benefits. Doherty (2009) reported planning volunteers experienced a greater inconvenience to their work, family, and/or summer vacation, felt undue pressure to perform well, felt taken advantage of by paid staff and lack of sufficient volunteers to do the work than onsite volunteers. Elstad (1996) noted out of pocket expenses for transportation and food, having too little or too much to do, and poor organization of volunteers as the greatest costs to their volunteer experience, whereas South et al. (2020) reported minimal costs associated with volunteers' experience at all. These results are consistent with the current study that identified personal inconvenience as the greatest experienced cost. However, the general population indicated they experienced this cost to a limited degree (average factor ratings of 1.44 to 2.77 on a seven-point scale) as opposed to medical volunteers who rated this experience as moderate (average rating of 4.59 on a seven-point scale). Medical volunteers ultimately experienced the time commitment, the inconvenience to family/work responsibilities, and the inconvenience to their vacation time (which they may have had to use to take up the volunteer position) more than the general population. Medical volunteers also identified unreasonable expectations as a possible cost (average rating of 3.46 on a seven-point scale). They experienced feeling like they were being taken advantage of by paid staff and requiring undue personal expense, which was consistent with the planning volunteers from Doherty (2009), who also experienced a low degree of being taken advantage of by paid staff. An interesting finding which could

relate medical volunteers to the role of a planning volunteer and could be collectively undervalued by paid staff. The disappointment regarding the out-of-pocket expenses (perhaps perceived as lost earning, as MSMG travel and accommodation is typically covered) could also be a result of feeling unappreciated by the event managers, and managers not having a sufficient understanding of the impact the medical volunteers have on the event and the athletes themselves. Medical volunteers are often an afterthought and the expectation for them to pull up their socks and provide a 1st class service with all medical responsibility but often little support, financial or otherwise, has resulted in frustration (Anonymous Medical Volunteers, Personal Communication, 2022).

Differences between medical professions and medical roles were, again, not able to be analyzed due to insufficient power. However, it does appear that minimal differences exist between medical volunteers' experienced costs. Nonetheless, Sport Medicine Physicians appeared to have experienced task overload and unreasonable expectations to a greater extent than their colleagues, potentially due to the added responsibility on a Sport Medicine Physicians with their increased scope of practice and access to controlled acts (Canadian Academy of Sport and Exercise Medicine, 2023; College of Physicians and Surgeons of Ontario, 2021). Certified Athletic Therapists appeared to have experienced lack of ability to a marginally greater extent than colleagues (average rating of 2.00 for CAT(C), in comparison to an average rating of 1.68 for remaining medical volunteers). It is not clear why Certified Athletic Therapists appeared to experience greater lack of ability at their MSMG. One explanation may be that they were recent graduates and thus lacking the confidence of the medical volunteers from other professions. Given the large proportion of respondents, including Certified Athletic Therapists, who considered the 2022 Jeux du Canada Games experience, and an indication that most of the ATs involved with that event were new grads (Anonymous Medical Volunteers, 2022 Jeux du Canada Games, Personal Communication, 2022) it is possible that the perceptions of the Certified Athletic Therapists in this study reflect that context. Another potential explanation is a common working environment for Certified Athletic Therapists being with a particular team or sport. This can often result is seeing common injuries associated with said team/sport and being in the MSMG setting could provide opportunities to see injuries or illnesses they may not have as much experience

with. Finally, team medical volunteers appeared to experience task overload to a greater extent than core and host medical, potentially due to them being associated with a specific team or athlete that places inordinate demands on them around the clock as opposed to core or host medical volunteers who typically have scheduled hours.

Those who volunteered for a MSMG during the COVID-19 pandemic noted some unique benefits and costs. About a quarter of participants reported additional benefits such as traveling and engaging with elite sport again, as well as learning to provide remote support and organize large-scale events during a pandemic. However, these benefits were likely offset by the costs associated with volunteering during a global pandemic. Medical volunteers noted additional challenges with travel logistics, increased task load, and a risk of potentially bringing COVID-19 home to friends and family. They also noted that some benefits that may have otherwise been experienced were compromised such as networking with other medical practitioners and not being able to experience the host community and culture. Medical volunteers clearly valued the opportunity to learn about the COVID-19 pandemic, and how to plan and coordinate events of great magnitude during a time of such turbulence and unknowns. It speaks to their appreciation for professional development and highlights how they value adding to their professional knowledge and skills. The costs experienced during COVID-19 appear to be separate from those experienced in general. All medical volunteers experienced personal inconvenience, however those who volunteered during the pandemic noted costs above and beyond that of inconvenience. It is not clear from this qualitative data the extent to which they experienced these particular benefits and costs, in comparison to those outlined in the survey, however the findings provide insight to the experiences of MSMG medical volunteers in the unique pandemic circumstances.

Medical volunteers were generally satisfied with their experiences (average rating ranging from 5.16 to 6.15), however there is still room for improvement. It is important volunteers are satisfied with their experience and continue to volunteer as without the efforts of volunteers, MSMG would not be sustained (Green & Chalip, 2004). Medical volunteers identified daily logistics and task support as the areas of greatest satisfaction. The medical volunteers particularly appreciated the daily organization of how their rest

breaks were managed, the comfort of their working environment, and communication regarding changes to the daily schedule. They also appreciated the support they received from their supervisor and the medical supplies that were available to complete their tasks. These findings are consistent with those of Doherty (2003) who determined that both planning and games times volunteers were most satisfied with their working environment. Planning volunteers valued the safety and comfort of their working conditions whereas games time volunteers emphasized their supervisor and venue team. Again, minor differences were noted between professions and medical roles however insufficient power prevented our ability to interpret results. It appears, however, that Sport Medicine Physicians were less satisfied with their volunteer context and volunteer management than their colleagues. This is interestingly consistent with the results of Reeser et al. (2005) who also noted less satisfaction from their Sport Medicine Physicians in comparison to the other medical volunteers. As indicated previously, Sport Medicine Physicians have an increased scope of practice and access to controlled acts (Canadian Academy of Sport and Exercise Medicine, 2023; College of Physicians and Surgeons of Ontario, 2021) and perhaps this results in increased time in the polyclinic or with more combat sports which leaves them less flexibility with their venue or volunteer assignment options. Finally, Sport Medicine Physicians may be seemingly less satisfied with the volunteer management they experienced because they typically work in well-supported environments, with nursing, other medical practitioners and administrative support for their practice, and the more turbulent context of medical volunteering may be more outside of their usual experience or comfort zone.

It was of interest to understand what benefits, costs and satisfying aspects impacted a medical volunteer's overall satisfaction, and their intent to volunteer for another MSMG. The benefit of professional development was a significant factor for the medical volunteer's overall satisfaction with their MSMG experience, however seemingly offset by unreasonable expectations. The importance of building or strengthening their professional network, gaining some practical experience, and acquiring and developing new skills to an overall positive experience is highlighted. No matter how experienced or inexperienced the medical volunteers, the opportunity to continue to build their professional self was a key factor in their positive attitude about the event as a whole.

However, that overall satisfaction was compromised due to undue personal expenses and a feeling of being taken advantage of by paid staff. Daily logistics and volunteer management were identified as two areas of satisfaction that can have a significant impact on a volunteer's overall satisfaction with the event. The better organized their day is with a comfortable environment, good communication, good services available such as food and parking and sufficient recognition for their volunteer contributions, the more satisfied medical volunteers will be with their experience. Thus, daily logistics of the medical volunteers' work, along with the organization and management of volunteers in general, indicate the importance of attention to details pertaining to their professional involvement as well as their personal engagement as a volunteer. These findings are consistent with those of Aisbett et al. (2015), Farrell et al. (1998), and Larocque et al. (2002) who also identified communication with other volunteers and the organization of daily operations as essential to volunteers' overall satisfaction. Reeser et al. (2005) found that athlete appreciation, public recognition, and interpersonal relationships with both athletes and other practitioners also impacted their volunteer's overall satisfaction and were consistent with the results of this study. However, in contrast, Aisbett et al. (2015) noted minimal impact of the supervisors' perceived support and Holmes et al. (2018) identified the negative impact of a particular management style for volunteers' overall satisfaction. Although daily logistics and general volunteer management are critical to most volunteers, including medical volunteers, volunteer management was the least satisfying aspect for medical volunteers suggesting room for improvement in this aspect.

Finally, this study looked at medical volunteers' likelihood to volunteer for another MSMG hosted in their community, in their province/territory, or anywhere in Canada. It was important to understand what contributes to medical volunteers' continued volunteerism because without them, these MSMG could not move forward, as previously discussed, medical support is a requirement (Al Jufaili et al., 2015; Fédération Équestre Internationale, 2021). Results showed that about two-thirds of the medical volunteers would volunteer for another MSMG if it was hosted community, while less than half indicated their intent to volunteer for another MSMG hosted in their province/territory or anywhere in Canada. These findings are in contrast with previous research on the general sport event volunteer population that suggests a strong willingness to get involved in

another event (Doherty, 2009; Downward & Ralston, 2006). Doherty (2009) discovered 98.2% of both planning and on-site volunteers would volunteer for another event and that the more opportunity to contribute to one's community with minimal task overload and personal inconvenience would positively impact their intent to volunteer again. In contrast, this study discovered that the experience of professional development and satisfaction with volunteer management were the only factors that significantly impacted a volunteers' intent to return and volunteer at another MSMG hosted in their community, in their province/territory and anywhere in Canada. An exception is satisfaction with the volunteer context which also played a significant role in impacting medical volunteers' intent to volunteer again for a MSMG hosted anywhere in Canada. These findings indicate that to the extent the medical volunteers "built or strengthened their professional network," "developed a greater understanding/appreciation for sports," "gained some practical experience,", and "acquired and developed new skills," and so on, they will be more likely to volunteer again for another MSMG. Satisfaction with volunteer management at a previous MSMG can also go a long way to setting medical volunteers up to be involved in the future. Again, this was an aspect that medical volunteers in the current study were least satisfied with, and so it warrants attention by MSMG organizers.

6 Conclusion

6.1 Study Limitations and Future Research

There are several limitations of this study that should be discussed. First, the results may be biased towards the Jeux du Canada Games as half of the respondents (n = 39, 50%) were referring to that event in the summer of 2022. Although the type, size or profile of a major sport event can vary (Doherty, 2009), the medical services offered, and the volunteer management to coordinate such services, likely has similarities across MSMG. Nonetheless, caution should be undertaken with generalizing the findings to a wide range of MSMG, and beyond the sample of medical volunteers studied in this investigation. A second limitation is the cross-sectional nature of the study. Although survey respondents were invited to reflect on their most recent MSMG medical volunteer experience, the responses were captured at one point in time, and with up to six years passed for some. It is also important to note this time period included the COVID-19 global pandemic and thus a unique experience for some. However, only 23 (29.5%) of the respondents were referring to an event that occurred during the height of the pandemic, and they identified quite unique benefits and costs, in addition to their ratings for the pre-specified items. A third limitation was the small sample size, which compromised the power of several analyses that might have confirmed apparent variations among medical professionals and different volunteer roles (team, host, core), and highlighted nuances between these groups. Future research may address these limitations in several ways. Investigators can incorporate a variety of approaches to generate a larger sample of medical volunteers, such as approach them on-site at another MSMG or a professional conference where the study and potential outcomes could be discussed in greater detail; increase the time frame for data collection and potentially have two different calls for participation, for example one notification in the spring and one in the fall; and, finally, partner with MGC as another means of communicating with medical practitioners about the study. A larger sample size with a time frame that does not include the COVID-19 pandemic could also produce a greater balance of respondents representing a range of MSMG events.

There are a number of other directions for future research that may be considered, as a result of the current study. First, intent to volunteer for another MSMG hosted

internationally was measured but not analyzed as it did not make sense with half of the medical volunteers referencing their Canada Games experience. With a more balanced sample of medical volunteers from other MSMG events, this question may be revisited in future research. Second, intent to encourage other medical practitioners to volunteer for a MSMG hosted in their community, in their province/territory, or anywhere in Canada was also measured but not considered in the results here. It may be addressed in future research as word of mouth can be a powerful prompt for behavior. Third, this study identified some differences between medical professions that merit further investigation. As described above, medical volunteers on-site at a MSMG are responsible for the same tasks – to maintain the health and safety of each participating athlete and ,when possible, support a safe and efficient return to play following injury or illness – however, the descriptive findings suggest there may be some differences in perceived benefits and costs and satisfaction between types of practitioners, and roles on-site (host, core, team). Fourth, a qualitative research method could be used to explore in greater detail some of the findings from the current study. For example, interviews with medical volunteers following a MSMG involvement can be used to gain further insight to the importance of the profession-related aspects of volunteering that were identified as most beneficial (professional identification and networking) and most impactful (professional development). Similarly, greater understanding of the most costly (personal inconvenience) and most compromising (unreasonable expectations) aspects of the medical volunteer experience may be explored. Another qualitative approach could be a longitudinal investigation to gain a better, more enriched, understanding of one unique medical profession, such as Sport Medicine Physicians, and their experience at a MSMG from start to finish.

Given the medical volunteers' perception that there were unreasonable expectations, and they were taken for granted by paid staff, a fifth direction for future research may be to explore the perceptions of MSMG staff and senior volunteers regarding the role, contribution and needs of medical volunteers. There is very little research addressing the organizers' perspectives of volunteer management, and medical services and medical volunteers may be a good context for such work. Together, these directions for future research will build on existing knowledge, including from the current study, about the

engagement of medical volunteers in MSMG. Finally, a sixth direction for future research would be to replicate this study with other professional volunteers such as parasport classifiers, sport technical staff, and sport officials.

6.2 Implications for Practice

Given the importance of professional development, unreasonable expectations, and satisfaction with daily logistics and volunteer management to overall satisfaction, and the importance of professional development, volunteer management and volunteer context to future intentions to volunteers, the following implications for practice by MSMG organizers and MGC are shared:

- Create roles that provide medical volunteers with opportunity to acquire, develop and gain new skills and build or strengthen their professional network. For example,
    - Offer a continuing education course before or after the MSMG that allows volunteers to collect continuing education credits with their professional association. This would offer a formal professional development opportunity.
    - Host a professional networking event that would allow medical volunteers to step away from their daily responsibilities and focus intentionally on professional networking.
- Limit unreasonable expectations.
    - Ensure paid staff and more senior volunteers understand the role of medical volunteers and how their position differs from the general volunteer position. For example, include in their (paid staff and senior volunteers) training and preparation some background on the role of medical services, the nature of medical practitioners who volunteer their time, their working conditions, and (from this study) what is most satisfying, beneficial, and costly to them.
    - Ensure the training and orientation for the medical volunteers is thorough and detailed so they can manage their expectations coming into the event.
- Recruit prospective medical volunteers by targeting the most beneficial and satisfying aspects of the volunteer experience.

- Prioritize assigning venues, sport, and volunteer teams to medical volunteers based on indicated preferences.
- Consider any unique obstacles for medical volunteer that could support their daily logistics and volunteer management.
    - For example, keeping the food open later to accommodate the medical volunteers who work with athletes after the last event, offer flexible time or location for medical volunteers to eat as their roles can have them moving throughout different venues in a day, and prioritizing parking/transportation needs if their role requires them to travel between venues.
- Provide substantial recognition for medical volunteers' contribution.
    - For example, include a public thank you from the organizing committee recognizing the medical volunteers' unique contributions. This could be a formal announcement and/or recognition throughout the MSMG at various venues or events.

6.3 Conclusion

Limited research on medical volunteers has been conducted to date. The purpose of this study was to address this gap in knowledge and provide a better understanding of medical volunteers' perceived benefits, costs, and satisfaction with a MSMG experience, and what factors contribute to their overall satisfaction and their intent to volunteer for another MSMG. This is important because medical practitioners do this as part of their employment and event managers need to understand what would contribute to them continuing to offer medical services on a volunteer basis. The study was framed by social exchange theory (Homans, 1961), which says that individuals will engage in a behavior if they perceive the benefits of doing so outweigh the costs. It was determined that the medical volunteer cohort studied here was more interested in the professional benefits that volunteering at a MSMG can provide than the social enrichment or community/event contribution from their involvement. The medical volunteers perceived professional identification and networking as the greatest benefits of volunteering for a MSMG. They valued being able to use their knowledge, experience, skills, and abilities to help the athletes perform well and create a better experience for them. They appreciated that their

skills were needed and valued meeting other medical volunteers with varying skills. They thoroughly enjoyed reuniting with past colleagues and working with different colleagues from throughout Canada. These aspects of a MSMG can and should be highlighted when recruiting medical practitioners to volunteer their time. Personal inconvenience to their family, work, or vacation time was identified as the greatest experienced cost, however, it was not as strong as the benefits, consistent with social exchange theory. Daily logistics and task support were the areas of the medical volunteers' greatest satisfaction, aspects that enabled them to carry out their professional work. Professional development was identified as the significant contributing factor to the medical volunteers' overall satisfaction with a MSMG however, it can be impacted by the level of unreasonable expectations put on them. It is important for MSMG organizers, and particular those responsible for managing medical services, to be aware of the particularly positive and negative forces shaping medical volunteers' experiences with such events. Finally, a medical volunteer's intent to volunteer for another MSMG can be significantly impacted by their professional development experience and their satisfaction with the volunteer management; still another reason to ensure these aspects are effectively addressed in the context of medical services. These results provide a much-needed understanding of this unique group of volunteers that can inform their recruitment, and the design and management of MSMG medical services, to promote positive attitudes to medical volunteering, support their continued volunteerism and, in turn, ensure first class continued support for the athletes.

7 References

Aisbett, L., Randle, E., & Kappelides, P. (2015). Future volunteer intentions at a major sport event. *Annals of Leisure Research*, *18*(4), 491–509. https://doi.org/10.1080/11745398.2015.1079492

Al Jufaili, M. S., Bishenden, W. S. A., Dohi, M., Drezner, J., Patricios, J., Pedrinelli, A., Schmied, C., & Zideman, D. A. (2015). *Football emergency medicine manual (*2nd ed.). https://digitalhub.fifa.com/m/26f48cc2b5c24e6e/original/szriio9ble9hvoyns04h-pdf.pdf

Ali, A., Staunton, M., Quinn, A., Treacy, G., Kennelly, P., Hill, A., Sreenan, S., & Brennan, M. (2021). Exploring medical students' perceptions of the challenges and benefits of volunteering in the intensive care unit during the COVID-19 pandemic: A qualitative study. *BMJ Open*, *11*(12). https://doi.org/10.1136/bmjopen-2021-055001

Angosto, S., Bang, H., Bravo, G. A., Díaz-Suárez, A., & López-Gullón, J. M. (2021). Motivations and future intentions in sport event volunteering: A systematic review. *Sustainability*, *13*(22). https://doi.org/10.3390/su132212454

Barlow, J., & Hainsworth, J. (2001). Volunteerism among older people with arthritis. *Ageing and Society* (Vol. 21). https://doi.org/10.1017/S0144686X01008145

Baum, T., & Lockstone, L. (2007). Volunteers and mega sporting events: Developing a research framework. *International Journal of Event Management Research*, *3*(1). www.ijemr.org

Benda, C. (1991). Sideline samaritans: The pros and cons of volunteering. *Physician and Sportsmedicine*, *19*(11). https://doi.org/10.1080/00913847.1991.11704896

Blau, P. M. (1964). *Exchange and power in social life* (2nd ed.). Routledge. https://doi.org/10.4324/9780203792643

Byers, T., Slack, T., & Parent, M. M. (2012). *Key Concepts in Sport Management*. Sage.

Campbell, C., Campbell, D., Krier, D., Kuehlthau, R., Hilmes, T., & Stromberger, M. (2009). Reduction in burnout may be a benefit for short-term medical mission volunteers. *Mental Health, Religion and Culture*, *12*(7), 627–637. https://doi.org/10.1080/13674670903124541

Canadian Academy of Sport and Exercise Medicine. (2023). *What is a Sport and Exercise Medicine Physician?* Retrieved December 4, 2022, from https://casem-acmse.org/public-directory/what-is-a-sport-and-exercise-medicine-physician/

Canadian Academy of Sport and Exercise Medicine. (2023). *What is a sport doc?* Retrieved December 4, 2022, from https://casem-acmse.org/wp-content/uploads/2019/01/CASEM-What-is-a-sport-doc.pdf

Canadian Athletic Therapists Association. (n.d.). *Athletic Therapy - Scope of Practice*. Retrieved July 14, 2023, from https://athletictherapy.org/en/about-athletic-therapy/scope-of-practice/

Canadian Athletic Therapists Association. (n.d.). *Job Opportunity*. Retrieved March 6, 2023, from https://athletictherapy.org/members/en/opportunities/job-opportunities.aspx

Canadian Sport Massage Therapist Association. (2017). *Sport Fellow Requirements*. Retrieved July 14, 2023, from https://www.csmta.ca/Membership-Levels

Canadian Sport Massage Therapists Association. (2019). *Sport Massage Therapy - Scope of Practice*. Retrieved June 18, 2023, from https://www.csmta.ca/resources/Documents/CSMTA%20Information%20Booklet%202020.pdf

Canadian Sport Massage Therapists Association. (2017). *What is Sport Massage Therapy?* Retrieved March 7th, 2023, from https://www.csmta.ca/Sport-Massage

Celdrán, M., & Villar, F. (2007). Volunteering among older Spanish adults: Does the type of organization matter? *Educational Gerontology*, *33*(3), 237–251. https://doi.org/10.1080/03601270601161181

Chia, J. K. K., Tay, K. B., Suresh, P., Schamasch, P., Jegathesan, M., Mountjoy, M., Lim, W. K., Lwa, P. J., & Wong, C. Y. (2011). Medical care delivery at the Inaugural Youth Olympic Games Singapore 2010. *British Journal of Sports Medicine*, *45*(16), 1283–1288. https://doi.org/10.1136/bjsports-2011-090234

Cnaan, R. A., Handy, F., & Wadsworth, M. (1996). Defining who is a volunteer: Conceptual and empirical considerations. *Non-profit and Voluntary Sector Quarterly*, *25*(3), 364–383. https://doi.org/10.1177/0899764096253006

College of Chiropractors of Ontario. (2018). *Chiropractor - Scope of Practice*. Retrieved June 18, 2023, from https://cco.on.ca/members-of-the-public/scope-of-practice-and-authorized-acts/

College of Chiropractors of Ontario. (2018). *Controlled Acts*. Retrieved June 28, 2023, from https://cco.on.ca/members-of-the-public/scope-of-practice-and-authorized-acts/

College of Chiropractors of Ontario. (2018). *Who are chiropractors?* Retrieved December 4, 2022, from https://cco.on.ca/members-of-the-public/who-are-chiropractors/

College of Massage Therapists of Ontario. (2023). *Acupuncture*. https://www.cmto.com/rmts/rmts-and-acupuncture/

College of Physicians and Surgeons of Ontario. (2021). *Controlled Acts*. Retrieved July 26, 2023, from https://www.cpso.on.ca/Physicians/Policies-Guidance/Policies/Delegation-of-Controlled-Acts

College of Physiotherapists of Ontario. (2023). *Controlled Acts*. Retrieved June 28, 2023, from https://www.collegept.org/registrants/PA-FAQs/controlled-acts-other-restricted-activities-faqs

Commonwealth Sport. (2022). *Games*. https://www.commonwealthsport.com/commonwealth-games

Costa, C. A., Chalip, L., Christine Green, B., & Simes, C. (2006). Reconsidering the role of training in event volunteers' satisfaction. *Sport Management Review*, *9*(2), 165–182. https://doi.org/10.1016/S1441-3523(06)70024-9

Cuskelly, G., & Boag, A. (2001). Organizational commitment as a predictor of committee member turnover among volunteer sport administrators: Results of a time-lagged study. *Sport Management Review*, 65–86.

Cuskelly, G., Hoye, R., & Auld, C. (2006). *Working with volunteers in sport: Theory and practice*. Routledge.

DeVellis, R. (2012). *Scale development* (3rd ed.). Sage.

Doherty, A. (2003). *A study of the volunteers of the 2001 Alliance London Jeux du Canada Games*. London, ON: The University of Western Ontario.

Doherty, A. (2009). The volunteer legacy of a major sport event. *Journal of Policy Research in Tourism, Leisure, and Events*, *1*(3), 185–207. https://doi.org/10.1080/19407960903204356

Downward, P. M., & Ralston, R. (2006). The sports development potential of sports event volunteering: Insights from the XVII Manchester Commonwealth Games. *European Sport Management Quarterly*, *6*(4), 333–351. https://doi.org/10.1080/16184740601154474

Elstad, B. (1996). Volunteer perceptions of learning and satisfaction in a mega-event: The case study of the XVII Olympic Winter Games in Lillehammer. *Festival Management and Event Tourism*, *4*, 75–83.

Fairley, S., Gardiner, S., & Filo, K. (2016). The spirit lives on: The legacy of volunteering at the Sydney 2000 Olympic Games. *Event Management*, *20*(2), 205–215. https://doi.org/10.3727/152599516X14610017108747

Farrell, J. M., Johnston, M. E., & Twynam, D. G. (1998). Volunteer motivation, satisfaction, and management at an elite sporting competition. *Journal of Sport Management*, *12*, 288–300.

Fédération Équestre Internationale. (2021). *Guidelines for the medical coverage of events in compliance with article 109.10 GRs*. Retrieved on March 7th, 2023, from www.fei.org.

Gallarza, M. G., Arteaga, F., & Gil-Saura, I. (2013). The value of volunteering in special events: A longitudinal study. *Annals of Tourism Research*, *40*(1), 105–131. https://doi.org/10.1016/j.annals.2012.08.001

Garner, J. T., & Garner, L. T. (2011). Volunteering an opinion: Organizational voice and volunteer retention in nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly*, *40*(5), 813–828. https://doi.org/10.1177/0899764010366181

Getz, D. (1997). *Event management and event tourism*. Cognizant Communications Corporation.

Goh, Z. K. (2022). *Dakar 2022 Youth Olympic Games postponed to 2026* [Press release]. https://olympics.com/en/news/dakar-2022-youth-olympic-games-postponed-to-2026

Government of Ontario. (2021). *Physiotherapy - Scope of Practice*. Retrieved June 18, 2023, from https://www.ontario.ca/laws/statute/91p37

Government of Ontario. (2021). *RMT - Scope of Practice*. Retrieved July 3, 2023, from https://www.ontario.ca/laws/statute/91m27/v3

Grant, M. E., Steffen, K., Glasgow, P., Phillips, N., Booth, L., & Galligan, M. (2014). The role of sports physiotherapy at the London 2012 Olympic Games. *British Journal of Sports Medicine*, *48*(1), 63–70. https://doi.org/10.1136/bjsports-2013-093169

Gravelle, F., & Larocque, L. (2005). Volunteerism and serious leisure: The case of the Francophone Games. *World Leisure Journal*, *47*(1), 45–51. https://doi.org/10.1080/04419057.2005.9674385

Green, B. C., & Chalip, L. (2004). *Paths to volunteer commitment- Lessons from the Sydney Olympic Games* (R. A. Stebbins & M. Graham, Eds.). CABI.

Guillet, E., Sarrazin, P., Carpenter, P. J., Trouilloud, D., & Cury, F. (2002). Predicting persistence or withdrawal in female handballers with social exchange theory. *International Journal of Psychology*, *37*(2), 92–104. https://doi.org/10.1080/00207590143000243

Ho, Y. W., You, J., & Fung, H. H. (2012). The moderating role of age in the relationship between volunteering motives and well-being. *European Journal of Ageing*, *9*(4), 319–327. https://doi.org/10.1007/s10433-012-0245-5

Holmes, K., Nichols, G., & Ralston, R. (2018). It's a once-in-a-lifetime experience and opportunity- deal with it! Volunteer perceptions of the management of the volunteer experience at the London 2012 Olympic Games. *Event Management*, *22*(3), 389–403. https://doi.org/10.3727/152599518X15252895715050

Holmes, K., Smith, K. A., Lockstone-Binney, L., & Baum, T. (2010). Developing the dimensions of tourism volunteering. *Leisure Sciences*, *32*(3), 255–269. https://doi.org/10.1080/01490401003712689

Homans, C. G. (1958). Social behavior as exchange. *American Journal of Sociology*, *63*(6), 597–606.

Homans C. G. (1961). *Social behavior: It's elementary forms*. Harcourt, Brace & World.

Homans, C. G. (1974). *Social behavior* (Revised ed.). Harcourt-Brace.

Humphreys, K., & Carpenter, C. (2010). Experiences of the voluntary physiotherapist role in developing nations. *International Journal of Therapy and Rehabilitation*, *17*(3), 150–158.

International Olympic Committee. (2016). *Olympic Movement Medical Code*. https://stillmed.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/Olympic_Movement_Medical_Code_2016_eng.pdf

International Olympic Committee. (2020). *Tokyo Olympic Games - Overview*. https://olympics.com/en/olympic-games/tokyo-2020

International Paralympic Committee. (2022). *Beijing Paralympic Games - About*. https://www.paralympic.org/beijing-2022/about

International University Sports Federation. (2022). *Universiade - About us*. https://www.fisu.net/

Jeux du Canada Games. (n.d.). *2022 Canada Summer Game Venues*. Retrieved January 2, 2023, from https://niagara2022games.ca/venues/

Jeux du Canada Games. (n.d.). *Athletes, Canada Games*. Retrieved November 10, 2022, from https://www.canadagames.ca/athletes

Jeux du Canada Games. (2022). *Games, Canada Games*. Retrieved March 7th, 2023, from https://www.canadagames.ca/games

Jiang, D., Warner, L. M., Chong, A. M. L., Li, T., Wolff, J. K., & Chou, K. L. (2021). Benefits of volunteering on psychological well-being in older adulthood: Evidence from a randomized controlled trial. *Aging and Mental Health*, *25*(4), 641–649. https://doi.org/10.1080/13607863.2020.1711862

Kim, D. S., Lee, Y. H., Bae, K. S., Baek, G. H., Lee, S. Y., Shim, H., On, M. G., & Rhie, S. J. Y. (2019). PyeongChang 2018 Winter Olympic Games and athletes' usage of 'polyclinic' medical services. *BMJ Open Sport and Exercise Medicine* (5)1. https://doi.org/10.1136/bmjsem-2019-000548

Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods*, *9*(2), 202–220.

Larocque, L., Gravelle, F., & Karlis, G. (2002). Volunteerism and serious leisure: The case of the Francophone Games. *Paper Presented at the Proceedings of the 10th Canadian Congress on Leisure Research*, 181–183.

Lertwanich, P., Wunnasinthop, S., Tharmviboonsri, T., Asavamongkolkul, A., & Kulthanan, T. (2011). Medical services during the 24th summer Universiade. *Siriraj Medical Journal*, *63*(1).

Lockstone, L., & Baum, T. (2009). The public face of event volunteering at the 2006 Commonwealth Games: The media perspective. *Managing Leisure*, *14*(1), 38–56. https://doi.org/10.1080/13606710802551254

Lum, T. Y., & Lightfoot, E. (2005). The effects of volunteering on the physical and mental health of older people. *Research on Aging*, *27*(1), 31–55. https://doi.org/10.1177/0164027504271349

MacLean, J., & Hamm, S. (2007). Motivation, commitment, and intentions of volunteers at a large Canadian sporting event. *Leisure / Loisir*, *31*(2), 523–556. https://doi.org/10.1080/14927713.2007.9651394

Major Games Canada. (2023). *About Us*. Retrieved February 24, 2022, from https://majorgames.ca/about-us

Malcolm, D., & Safai, P. (2012). *The social organization of sports medicine - Critical socio-cultural perspectives*. Routledge.

Maslach, C., Jackson, S., & Leiter, M. (1996). *Maslach Burnout Inventory manual* (3rd ed.). Consulting Psychologists Press.

Molm, L. D. (1994). Dependence and risk: Transforming the structure of social exchange. *Social Psychology Quarterly*, *57*(3), 163–176.

Morrow-Howell, N., Hinterlong, J., Rozario, P. A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *Journal of Gerontology*, *58B*(3), 137–145.

Musick, M. A., & Wilson, J. (2003). Volunteering and depression: the role of psychological and social resources in different age groups. In *Social Science & Medicine* (56)2, 259–269.

Niagara 2022 Jeux du Canada Games. (2022). *Meeting Agenda*. https://docs.google.com/document/d/10nNnZjOxCsgaZpUcwfLrNEt-35ZVNDMHgqNj1NrystA/edit

Nunally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Ontario Athletic Therapists Association. (n.d.). *Athletic Therapy - Scope of Practice*. Retrieved June 18, 2023, from https://www.ontarioathletictherapists.org/Resources/Documents/1%20OATA_AT%20Careers%20Brochure-webview.pdf

Ontario Regulated Health Professions Act. (1991). *Controlled Acts*. https://www.ontario.ca/laws/statute/91r18/v45#BK12

Petkau, G., Smith, M., Havercamp, M. J., Lundin, S. M., Mckay, M. B., Jackson, D. W., Lee, A. J., Burden, C. J., & Shure, R. S. (1991). Volunteering: Continuing expansion of the definition and a practical application of altruistic motivation. *Journal of Volunteer Administration*, *9*(4), 36–41.

Proulx, C. M., Curl, A. L., & Ermer, A. E. (2018). Longitudinal associations between formal volunteering and cognitive functioning. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, *73*(3), 522–531. https://doi.org/10.1093/geronb/gbx110

Quinn, N., & Misener, L. (2022). Investigating the nexus of paralympic bodies with medicine. *Sociology of Sport Journal*, 1–9. https://doi.org/10.1123/ssj.2021-0133

Razumovskaya, E. M., Mishakin, T. S., Popov, M. L., & Kucevol, N. G. (2014). Medical services during the XXVII World Summer Universiade 2013 in Kazan. *Mediterranean Journal of Social Sciences*, (*5)*18 Special Issue, 17–20. https://doi.org/10.5901/mjss.2014.v5n18p17

Reeser, J. C., Berg, R. L., Rhea, D., & Willick, S. (2005). Motivation and satisfaction among polyclinic volunteers at the 2002 Winter Olympic and Paralympic Games. *British Journal of Sports Medicine*, *39*(4). https://doi.org/10.1136/bjsm.2004.015438

Roche, M. (2000). *Mega-events: Olympics and expos in the growth of global culture*. Routledge.

Royal College of Chiropractic Sports Sciences (Canada). (n.d.). *About*. Retrieved June 18, 2023, from https://www.rccssc.ca/index.php/about/rccssc-history

Safai, P. (2005). The demise of the Sport Medicine and Science Council of Canada. *Sport History Review*, *36*(2), 91–114.

Sawyer, K. L. & Lopopolo, R. (2004). Perceived impact on physical therapist students of an international pro bono clinical education experience in a developing country. *Journal of Physical Therapy Education; Fall*, *18*(2), 40.

Sherman, N. E., Michel, R., Rybak, C., Randall, G. K., & Davidson, J. (2011). Meaning in Life and Volunteerism in Older Adults. *Adultspan Journal*, *10*(2). https://mds.marshall.edu/adspDOI:-Availableat:https://mds.marshall.edu/adsp/vol10/iss2/2

Solberg, H. A. (2003). Major sporting events: Assessing the value of volunteers' work. *Managing Leisure*, *8*(1), 17–27. https://doi.org/10.1080/1360671032000075216

South, J., Woodall, J., Southby, K., Jones, R., Yates, G., Kinsella, K., & May, E. (2020). Volunteerism, social context, and health impacts: A qualitative study of Glasgow Commonwealth Games event volunteers. *Cities & Health*, 1–13. https://doi.org/10.1080/23748834.2020.1791424

Sport Physiotherapy Canada. (2015). *Role of a Sport Physiotherapist*. Retrieved December 4, 2022, from https://www.sportphysio.ca/role-of-a-sport-physio/

Stebbins, R. A. (1982). Serious Leisure: A Conceptual Statement. *Pacific Sociological Review*, *25*(2), 251–272. www.jstor.org

Stebbins, R. A. (1998). *After Work: The Search for an Optimal Leisure Lifestyle.* Detseling Enterprise Ltd.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). Routledge.

Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson.

Tang, F. (2009). Late-life volunteering and trajectories of Physical health. *Journal of Applied Gerontology*, *28*(4), 524–533. https://doi.org/10.1177/0733464808327454

Tang, F., Choi, E., & Morrow-Howell, N. (2010). Organizational support and volunteering benefits for older adults. *Gerontologist*, *50*(5), 603–612. https://doi.org/10.1093/geront/gnq020

The Tokyo Organizing Committee of the Olympic and Paralympic Games. (2021). *Media guide*.

Thibault, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. Wiley.

Twynam, D. G., Farrell, J. M., & Johnston, M. E. (2002). Leisure and volunteer motivation at a special sporting event. *Leisure/ Loisir*, *27*(3–4), 363–377. https://doi.org/10.1080/14927713.2002.9651310

Van Willigen, M. (2000). Differential benefits of volunteering across the life course. *Journal of Gerontology*, *55*(5), 308–318. https://academic.oup.com/psychsocgerontology/article/55/5/S308/536418

Vanhegan, I. S., Palmer-Green, D., Soligard, T., Steffen, K., O'Connor, P., Bethapudi, S., Budgett, R., Haddad, F. S., & Engebretsen, L. (2013). The London 2012 summer Olympic Games: An analysis of usage of the Olympic village "Polyclinic" by competing athletes. *British Journal of Sports Medicine*, *47*(7), 415–419. https://doi.org/10.1136/bjsports-2013-092325

Vasquez, M. S., Fong, M. K., Patel, L. J., Kurose, B., Tierney, J., Gardner, I., Yazdani-Arazi, A., & Su, J. K. (2015). Medical planning for very large events: Special Olympics World Games Los Angeles 2015. *Current Sports Medicine Reports*, *14*(3). www.acsm-csmr.org

Windsor, T. D., Anstey, K. J., & Rodgers, B. (2008). Volunteering and psychological well-being among young-old adults: How much is too much? *Gerontologist*, *48*(1), 59–70. https://academic.oup.com/gerontologist/article/48/1/59/758987

Zachazewski, J. E., Magee, D. J., & International Olympic Committee. (2012). *Handbook of Sports Medicine and Science: Sports Therapy Services Organization and Operations* (Zachazewski J. & Magee D., Eds.; First Edition). Wiley-Blackwell.

8 Appendices

Appendix A Survey Items

Survey Items

BENEFITS

Professional Identification

- I was able to use my knowledge, experience, skills, and abilities
- My skills were needed
- I did something to help the athletes perform well
- I saw elite athletes
- I met new medical practitioners with varying skills
- I helped create a better experience for the athletes
- I did something worthwhile for the event
- It was a memorable experience

Professional Development

- I built or strengthened my professional network
- I developed a greater understanding/appreciation for sports
- I gained some practical experience
- Being a Games volunteer was prestigious
- I broadened my horizons
- I acquired and developed new skills
- I felt better about myself

Positive Life Experience

- I watched some of the events while working
- I did something different and varied my regular activities
- I interacted with other volunteers
- I worked at a preferred venue/event

Privileges

- I had access to places denied to the general public
- I got free souvenirs/memorabilia
- I had access to event information before the general public

Event Contribution

- I helped make the Games a success
- I contributed to volunteer team spirit
- I helped strengthen the image of the event

Networking

- I reunited with past colleagues
- I worked with colleagues from different areas of Canada

COSTS

Task Overload

- I felt taken advantage of by more senior volunteers
- There was undue pressure on me to perform my tasks well
- There were not enough other volunteers to help me do my tasks well

Lack of Ability

- I did not have the confidence to be able to do my tasks
- I did not receive adequate training for my assignment
- I did not have the knowledge or skills to be able to do my tasks

Unreasonable Expectations

- I felt taken advantage of by paid staff
- It required undue personal expense (out of my own pocket)

Personal Inconvenience

- It was inconvenient for my family/work responsibilities
- It was inconvenient to my vacation time
- It required a substantial time commitment

SATISFACTION

Daily Logistics

- Rest breaks during my shift(s)
- Comfort of the working environment
- Communication regarding changes to the daily schedule (ex. volunteer absences, break times etc.)

Volunteer Context

- Venue(s) to which I was assigned
- My volunteer assignment(s)
- My venue team/co- workers

Volunteer Management

- Parking/transportation for volunteers
- Food services for volunteers
- Recognition for my volunteer contributions
- Training I received
- Organization of medical volunteers for the Games
- Guidance and support to help me do my tasks

Task Support

- Medical supplies provided to complete my tasks
- My supervisor

Appendix B Controlled Acts

Controlled Acts: Physicians (Dip. Sport Med.)

Communicating to the individual or his or her personal representative a diagnosis identifying a disease or disorder as the cause of symptoms of the individual in circumstances in which it is reasonably foreseeable that the individual or his or her personal representative will rely on the diagnosis.

Performing a procedure on tissue below the dermis, below the surface of a mucous membrane, in or below the surface of the cornea, or in or below the surfaces of the teeth, including the scaling of teeth.

Setting or casting a fracture of a bone or a dislocation of a joint.

Moving the joints of the spine beyond the individual's usual physiological range of motion using a fast, low amplitude thrust.

Administering a substance by injection or inhalation

Putting an instrument, hand or finger,

beyond the external ear canal,

beyond the point in the nasal passages where they normally narrow,

beyond the larynx,

beyond the opening of the urethra,

beyond the labia majora,

beyond the anal verge, or

into an artificial opening in the body.

Applying or ordering the application of a form of energy prescribed by the regulations under the *RHPA*.

Prescribing, dispensing, selling or compounding a drug as defined in the *Drug and Pharmacies Regulation Act*, or supervising the part of a pharmacy where such drugs are kept.

Prescribing or dispensing, for vision or eye problems, subnormal vision devices, contact lenses or eye glasses other than simple magnifiers.

Prescribing a hearing aid for a hearing impaired person.

Fitting or dispensing a dental prosthesis, orthodontic or periodontal appliance or device used inside the mouth to prevent the teeth from abnormal functioning

Managing labour or conducting the delivery of a baby.

Allergy challenge testing of a kind in which a positive result of the test is a significant allergic response.

Treating, by means of psychotherapy technique, delivered through a therapeutic relationship, an individual's serious disorder of thought, cognition, mood, emotional regulation, perception or memory that may seriously impair the individual's judgement, insight, behaviour, communication or social functioning.

(College of Physicians and Surgeons of Ontario, 2021)

Controlled Acts: Registered Chiropractors (Fellow – Sport Sciences Residency Program (SSRP))

Communicating a diagnosis identifying, as the cause of a person's symptoms,

a disorder arising from the structures or functions of the spine and their effects on the nervous system, or a disorder arising from the structures or functions of the joints of the extremities.

Moving the joints of the spine beyond a person's usual physiological range of motion using a fast, low amplitude thrust.

Putting a finger beyond the anal verge for the purpose of manipulating the tailbone

(College of Chiropractors of Ontario, 2018)

Controlled Acts: Registered Physiotherapists (Dip.SportPhysio)

Spinal manipulation

Tracheal suctioning

Acupuncture (this includes dry needling)

Treating wounds below the dermis by cleansing, soaking, irrigating, soaking, probing, debriding, packing or dressing

Inserting a hand, finger, or instrument beyond the labia majora or anal verge for the purposes of assessing or rehabilitating pelvic musculature relating to incontinence or pain

Administering a substance by inhalation (when the substance has been ordered by an authorized person)

Communicating a diagnosis identifying a disease, physical disorder, or dysfunction as the cause of a person's symptoms.

However, Physiotherapists do not need to "roster" for access to this act meaning complete an additional online declaration because this is a fundamental part of PT practice.

(College of Physiotherapists of Ontario, 2023)

Controlled Acts: Registered Massage Therapists (Sport Fellow)

Acupuncture (this includes dry needling)

(College of Massage Therapists of Ontario, 2023)

Appendix C Descriptive Results

Table 8 Descriptive results of benefits by type of medical profession.

Benefits	Professional Designation	Mean	Std. Deviation	N
Professional Identification	MD	5.9464	1.41652	14
	Chiro	6.4531	.66123	8
	PT	6.5245	.30986	7
	CAT(C)	6.2297	.69003	37
	RMT	6.5114	.47584	11
	Total	6.2685	.82729	77
Professional Development	MD	5.3776	1.37779	14
	Chiro	5.8929	1.00364	8
	PT	5.3878	1.16559	7
	CAT(C)	5.5251	.90040	37
	RMT	5.9351	.94191	11
	Total	5.5826	1.03270	77
Positive Life Experience	MD	5.3036	1.83497	14
	Chiro	6.0312	1.09738	8
	PT	6.2857	.71339	7
	CAT(C)	5.7095	.86505	37
	RMT	5.4773	.84746	11
	Total	5.6883	1.12035	77
Privileges	MD	5.0714	1.91342	14
	Chiro	6.0000	1.00791	8
	PT	5.6190	1.14550	7
	CAT(C)	5.3874	1.43052	37
	RMT	5.6061	1.28078	11
	Total	5.4459	1.44045	77
Event Contribution	MD	5.3571	1.19446	14
	Chiro	5.2083	1.00692	8
	PT	5.9048	.80999	7
	CAT(C)	5.4144	1.16377	37
	RMT	5.5758	1.03377	11
	Total	5.4502	1.09593	77
Networking	MD	6.2500	1.42438	14
	Chiro	5.5625	2.07773	8
	PT	6.8571	.24398	7
	CAT(C)	6.1216	1.09548	37
	RMT	5.8636	1.50151	11
	Total	6.1169	1.30761	77

Table 9 Descriptive results of costs by type of medical profession.

Costs	Professional Designation	Mean	Std. Deviation	N
Task Overload	MD	2.1429	1.23146	14
	Chiro	1.5833	1.03510	8
	PT	1.5238	.53945	7
	CAT(C)	2.1579	1.36172	38
	RMT	1.8485	1.13885	11
	Total	1.9957	1.22208	78
Lack of Ability	MD	1.8095	1.15998	14
	Chiro	1.6250	1.06066	8
	PT	1.7619	.68622	7
	CAT(C)	2.0088	1.31858	38
	RMT	1.4545	.68755	11
	Total	1.8333	1.14182	78
Unreasonable	MD	4.2143	1.84718	14
Expectations	Chiro	3.3125	1.28000	8
	PT	3.6429	1.65112	7
	CAT(C)	3.4211	1.82522	38
	RMT	2.5909	1.33825	11
	Total	3.4551	1.72865	78
Personal	MD	5.1667	.87462	14
Inconvenience	Chiro	4.5000	1.61344	8
	PT	5.3810	1.12922	7
	CAT(C)	4.5965	1.48700	38
	RMT	3.4242	1.19342	11
	Total	4.5940	1.42301	78

Table 10 Descriptive results of satisfaction by type of medical profession.

Satisfaction	Professional Designation	Mean	Std. Deviation	N
Daily Logistics	MD	6.0000	.70408	14
	Chiro	6.2222	1.04704	6
	PT	6.6667	.50918	7
	CAT(C)	6.1574	.68307	36
	RMT	5.9394	.92878	11
	Total	6.1486	.75073	74
Volunteer Context	MD	5.0000	1.25405	14
	Chiro	6.3889	.64693	6
	PT	5.4286	.95674	7
	CAT(C)	5.4537	1.14961	36
	RMT	5.7576	1.65389	11
	Total	5.4865	1.23149	74
Volunteer	MD	4.8452	1.12178	14
Management	Chiro	5.6667	1.27366	6
	PT	5.3095	.69674	7
	CAT(C)	5.0556	1.05635	36
	RMT	5.5606	1.41671	11
	Total	5.1644	1.12109	74
Task Support	MD	6.1071	.96434	14
	Chiro	6.1667	.60553	6
	PT	6.5000	1.11803	7
	CAT(C)	5.8194	1.14113	36
	RMT	6.1364	.97701	11
	Total	6.0135	1.04676	74

Table 11 Descriptive results of benefits by type of medical role.

Benefits	Medical Role	Mean	Std. Error
Professional	Core	6.231	.132
Identification	Host	6.344	.174
	Team	6.250	.224
Professional	Core	5.575	.164
Development	Host	5.447	.217
	Team	5.827	.278
Positive Life	Core	5.619	.179
Experience	Host	5.696	.236
	Team	5.875	.302
Privileges	Core	5.225	.227
	Host	5.580	.300
	Team	5.857	.384
Event Contribution	Core	5.475	.173
	Host	5.638	.228
	Team	5.071	.292
Networking	Core	6.413	.204
	Host	5.761	.268
	Team	5.857	.344

Table 12 Descriptive results of costs by type of medical role.

Costs	Medical Role	Mean	Std. Error
Task Overload	Core	2.000	.192
	Host	1.812	.256
	Team	2.286	.328
Lack of Ability	Core	1.667	.178
	Host	1.928	.238
	Team	2.167	.305
Unreasonable Expectations	Core	3.512	.273
	Host	3.500	.364
	Team	3.214	.467
Personal Inconvenience	Core	4.675	.224
	Host	4.391	.299
	Team	4.690	.384

Table 13 Descriptive results of satisfaction by type of medical role.

Satisfaction	Medical Role	Mean	Std. Error
Daily Logistics	Core	6.179	.118
	Host	6.032	.165
	Team	6.250	.219
Volunteer Context	Core	5.407	.194
	Host	5.540	.272
	Team	5.667	.359
Volunteer Management	Core	5.142	.177
	Host	5.087	.247
	Team	5.375	.327
Task Support	Core	6.098	.163
	Host	6.071	.228
	Team	5.625	.302

Appendix D Western Ethics Approval

Western Research

Date: 28 March 2023

To: Prof. Alison Doherty

Project ID: 122243

Study Title: A study of medical volunteers at multi-sport major games from 2017 to 2022.

Short Title: Medical volunteers at major games.

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 14/Apr/2023

Date Approval Issued: 28/Mar/2023 14:01

REB Approval Expiry Date: 28/Mar/2024

Dear Prof. Alison Doherty

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. **All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.**

Documents Approved:

Document Name	Document Type	Document Date	Document Version
SURVEY_A study of medical volunteers at multi-sport major games	Online Survey	27/Mar/2023	
Recruitment email to the associations	Recruitment Materials	27/Mar/2023	
Letter of Information - A study of medical volunteers at multi-sport major game events from 2017 to 2022	Implied Consent/Assent	27/Mar/2023	

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Ms. Zoë Levi, Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix E Letter of Information and Consent

LETTER OF INFORMATION AND CONSENT

Study Title:
A study of medical volunteers at multi-sport major games from 2017 to 2022

Investigators:

Kelsie Stunden RMT, CAT(C)
Masters of Kinesiology, Management and Leadership (Candidate)
School of Kinesiology
Western University

Kaleigh Pennock, PhD
Post-Doctoral Associate
School of Kinesiology
Western University

Alison Doherty, PhD
Principal Investigator
Professor, School of Kinesiology
Western University

Information:

The research team of Ms. Kelsie Stunden, Dr. Kaleigh Pennock and Professor Alison Doherty at Western University invite you to participate in a survey study about medical volunteers at multi-sport major games from 2017 to 2022. This study is being conducted to better understand medical volunteers' experiences participating in multi-sport major games. Current and retired members of the Canadian Academy of Sport and Exercise Medicine, Royal College of Chiropractic Sport Sciences, Sport Physiotherapy Canada, Canadian Athletic Therapist Association, and Canadian Sport Massage Therapists Association who participated in multi-sport major games from 2017 to 2022 are welcome to participate. In the context of this study multi-sport major games includes the Jeux du Canada Games, Jeux de la Francophonie, Universiade (FISU), Commonwealth Games, Pan American Games, Parapan American Games, Paralympics, Olympics, and Youth Olympic Games.

Medical volunteers are a unique population of the volunteer workforce. They are highly educated professional using their employable skills and expertise in a volunteer capacity. There are numerous studies that provide insight into the general volunteer population's motivation and experienced costs and benefits but there is very limited research on the medical volunteer specifically. Research on medical services at multi-sport major games has focused primarily on injury epidemiology and health services best practices but has yet to focus on the volunteers themselves. Therefore, this study aims to better understand the medical volunteer's experienced benefits and costs volunteering for multi-sport major games and how that impacts their overall satisfaction and intent to volunteer again.

Participation:

This study is an online survey that will take approximately 15 minutes to complete. The survey must be completed in one sitting; once you exit the survey you will not be able to return to it.

At the completion of the survey, you may choose to be entered into a draw for one of five $25 Amazon Canada gift cards. In order to ensure the anonymity of your responses to the survey, you will be directed to a separate secure area from which you may your email address and make your request for the draw. Your contact information will only be used for the draw and will be destroyed once the draw has been made. Prizes will be drawn in May 2023 and winners will be contacted by email. For any draw, the odds of winning a prize depend on how many people are entered in the draw. As we do not know how many people will participate in this study and related draw, we cannot predict what will be the odds of winning a prize.

Benefits:

Participating in the survey will give you an opportunity to reflect on your medical volunteer experience at one of the multi-sport major games. Your participation will contribute to a better understanding of medical volunteers and what they perceive as positive and negative experiences. Our findings may help inform the development and management of more rewarding experiences for major games medical volunteers. You are welcome to contact the researchers at the email addresses listed above to receive a summary of the key findings.

Confidentiality and Potential Risks:

There are no known risks to participation in this study. Your survey responses will be collected anonymously and neither the researchers, your professional association, nor anyone else will be able to identify you as a participant. Participation in the survey will have no effect on your future opportunities for volunteering. Data will be collected through a secure online survey platform (Qualtrics). Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. Western's Qualtrics server is in Ireland. The data will be exported from Qualtrics and securely stored on Western University's server. As per University policy, data will be retained for a minimum of seven years and then destroyed.

Survey data will be anonymous and available only to the investigators listed in this letter. Any reporting of results will be in an aggregated format.

Representatives of Western University's Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research.

Rights:

Your participation in the study is voluntary. If you consent to participate, you have the right to not answer individual questions or to withdraw from the study at any time. If you decide to withdraw from the study, you may do so at any time by exiting the survey window and not returning. If you choose not to participate or to leave the study at any time it will have no effect on your membership or accreditation with your professional organization.

Due to the anonymous nature of your data, once your survey responses have been submitted, researchers will be unable to withdraw your data.

You do not waive any legal rights by consenting to this study.

Contact:

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, 1-844-720-9816, e-mail: ethics@uwo.ca. This office oversees the ethical conduct of research studies and is not part of the study team. Everything that you discuss will be kept confidential. This office oversees the ethical conduct of research studies and is not part of the study team. Everything that you discuss will be kept confidential. This letter is yours to keep for future reference.

By submitting the survey, you are indicating that you are at least 18 years of age, have read the letter of information, and comprehend the informed consent.

Appendix F Survey Instrument

A survey of medical volunteers at multi-sport major games

Start of Block: Default Question Block

Study Title:

A study of medical volunteers at multi-sport major games from 2017 to 2022

Investigators:

Kelsie Stunden RMT, CAT(C)

Masters of Kinesiology, Management and Leadership (Candidate)

School of Kinesiology

Western University

Kaleigh Pennock, PhD

Post-Doctoral Associate

School of Kinesiology

Western University

Alison Doherty, PhD

Principal Investigator

Professor, School of Kinesiology

Western University

Page Break

T1 **A Survey of Major Games Medical Volunteers**

Thank you for taking the time to participate in this study**.**

T2 **Section A. Background Information**

In this section we are interested in knowing who you are, so that we can know the profile of participants and determine whether there are similarities or differences across all the medical volunteers (please check or indicate your response):

Q1 What gender do you identify with?

- ☐ Man (1)
- ☐ Woman (2)
- ☐ I identify as (fill in the blank) (3) _____
- ☐ Prefer not to answer (4)

Q2 What is your age?

_____

Q3 Please select your professional designation(s) from the list below. Please include all professional designations you hold.

- ☐ Physician (Dip. Sport Med.) (1)
- ☐ Registered Chiropractor (Fellow –Sport Sciences Residency Program (SSRP)) (2)
- ☐ Registered Physiotherapist (Dip.SportPhysio) (3)
- ☐ Certified Athletic Therapist (CAT(C)) (4)
- ☐ Registered Massage Therapist (Sport Fellow) (5)

Q4 What year did you receive your designation?

_____

Q5 Using the chart below, please list your **most recent** volunteer experience at a multi-sport major games between 2017 - 2022. Please include the name of the event, the year, and your medical role (host, core, team).

In the context of this study multi-sport major games include the Jeux du Canada Games, Jeux de la Francophonie, Universiade (FISU), Commonwealth Games, Pan American Games, Parapan American Games, Paralympic Games, Olympic Games, and Youth Olympic Games.

Games	Year	Medical Role (host, core, team)

Q6 a) Did you volunteer at more than one multi-sport major games between 2017 - 2022?

Yes No

Q6 b) Using the chart below, please list remaining multi-sport major games that you volunteered for from 2017 - 2022.

Games	Year	Medical Role (host, core, team)
1.		
2.		
3.		
4.		

5.

Page Break

T3 **Please complete the following section according to when you volunteered for your MOST RECENT multi-sport major games, not your current status.**

Q7 How did you hear about the medical volunteer opportunity? (Check one answer that best applies to you)

- ○ Heard about it through my National Association / Regulatory College (1)
- ○ Heard about it through Major Games Canada (2)
- ○ Heard about it from a colleague or friend (3)
- ○ Other (4) _____
- ○ Prefer not to answer (5)

Q8 What was your employment status at the time you volunteered?

- ○ Working - Full time (1)
- ○ Working - Part time (2)
- ○ Retired (3)
- ○ Unemployed (4)
- ○ Homemaker (5)
- ○ Student (6)
- ○ Prefer not to answer (7)

Q9 If you were employed in a role related to your professional designation, what was your work setting?

- ○ Private Medical / Therapy Clinic (1)
- ○ University / College (2)
- ○ Professional Team (3)
- ○ Hospital (4)
- ○ Other (please describe) (5) _____
- ○ Prefer not to answer (6)

Q10 What was your marital status?

- ○ Married (1)
- ○ Living with a partner (2)
- ○ Separated / Divorce / Widowed (3)
- ○ Single (4)
- ○ Prefer not to answer (5)

Q11 Did you have any dependents you were caring for in your household (select all that apply)?

- ☐ Child / Children (1)
- ☐ Adult(s) (2)
- ☐ No dependents (3)
- ☐ Prefer not to answer (4)

Page Break

T4 **If you have volunteered at multiple games in the past six years, please use the MOST RECENT multi-sport major games to complete sections B, C and D.**

T5 **Section B. Experiences**

Q12 Listed below are various **benefits** you may have experienced being a medical volunteer. Please indicate the extent to which you experienced each of the following at your most recent Games:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Prefer not to answer (8)
I helped make the Games a success (1)	○	○	○	○	○	○	○	○
I was able to use my knowledge, experience, skills, and abilities (2)	○	○	○	○	○	○	○	○
I watched some of the events while working (3)	○	○	○	○	○	○	○	○
I had access to places denied to the general public (4)	○	○	○	○	○	○	○	○
I did something different and varied my regular activities (5)	○	○	○	○	○	○	○	○
I interacted with other volunteers (6)	○	○	○	○	○	○	○	○
I built or strengthened my professional network (7)	○	○	○	○	○	○	○	○

I contributed to volunteer team spirit (8)	○	○	○	○	○	○	○	○
My skills were needed (9)	○	○	○	○	○	○	○	○
I did something to help the athletes perform well (10)	○	○	○	○	○	○	○	○
I was “behind the scenes” at the Games (11)	○	○	○	○	○	○	○	○
I developed a greater understanding/appreciation for sports (12)	○	○	○	○	○	○	○	○
I made new friends (13)	○	○	○	○	○	○	○	○
I reunited with past colleagues (14)	○	○	○	○	○	○	○	○
I helped strengthen the image of the event (15)	○	○	○	○	○	○	○	○
I gained some practical experience (16)	○	○	○	○	○	○	○	○
I saw elite athletes (17)	○	○	○	○	○	○	○	○
Being a Games volunteer was prestigious (18)	○	○	○	○	○	○	○	○

I broadened my horizons (19)	○	○	○	○	○	○	○	○
I worked with different people (20)	○	○	○	○	○	○	○	○
I met new medical practitioners with varying skills (21)	○	○	○	○	○	○	○	○
I helped create a better experience for the athletes (22)	○	○	○	○	○	○	○	○
I acquired and developed new skills (23)	○	○	○	○	○	○	○	○
I mingled with athletes (24)	○	○	○	○	○	○	○	○
I worked at a preferred venue/event (25)	○	○	○	○	○	○	○	○
I worked with medical practitioners from different countries (26)	○	○	○	○	○	○	○	○
I did something worthwhile (27)	○	○	○	○	○	○	○	○

I got free souvenirs/memorabilia (28)	○	○	○	○	○	○	○	○
I worked with colleagues from different areas of Canada (29)	○	○	○	○	○	○	○	○
I felt better about myself (30)	○	○	○	○	○	○	○	○
It was a memorable experience (31)	○	○	○	○	○	○	○	○
I had access to event information before the general public (32)	○	○	○	○	○	○	○	○

Q13 If you volunteered for a multi-sport major games during the Covid19 pandemic, please describe any unique **benefits** you experienced.

_____

Page Break

Q14 Listed below are various **concerns** you may have had about being a medical volunteer. Please indicate the extent to which you experienced each of the following at your most recent Games:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Prefer not to answer (8)
I felt taken advantage of by paid staff (1)	○	○	○	○	○	○	○	○
It required undue personal expense (out of my own pocket) (2)	○	○	○	○	○	○	○	○
I was assigned boring tasks (3)	○	○	○	○	○	○	○	○
I did not receive adequate training for my assignment (4)	○	○	○	○	○	○	○	○

It required a substantial time commitment (5)	○	○	○	○	○	○	○	○
No one provided guidance or support to help me do my tasks (6)	○	○	○	○	○	○	○	○
I was given too much to do (7)	○	○	○	○	○	○	○	○
I was given too little to do (8)	○	○	○	○	○	○	○	○
I did not have the confidence to be able to do my tasks (9)	○	○	○	○	○	○	○	○

I felt taken advantage of by more senior volunteers (10)	○	○	○	○	○	○	○	○
It was inconvenient for my family/work responsibilities (11)	○	○	○	○	○	○	○	○
I felt undervalued as a volunteer (12)	○	○	○	○	○	○	○	○
I did not have the knowledge or skills to be able to do my tasks (13)	○	○	○	○	○	○	○	○
There was undue pressure on me to perform my tasks well (14)	○	○	○	○	○	○	○	○

It was inconvenient to my vacation time (15)	○	○	○	○	○	○	○	○
Things were generally disorganized regarding who should be doing what (16)	○	○	○	○	○	○	○	○
There were not enough other volunteers to help me do my tasks well (17)	○	○	○	○	○	○	○	○

Q15 If you volunteered for a multi-sport major games during the Covid19 pandemic, please describe any unique **concerns** you experienced.

_____

Page Break

T6 **Section C. Satisfaction with Your Volunteer Experience**

Q16 Please indicate how satisfied you were with each of the following aspects of your medical volunteer experience:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Prefer not to answer (8)
The overall volunteer experience (1)	○	○	○	○	○	○	○	○
My venue team/co-workers (2)	○	○	○	○	○	○	○	○
My volunteer assignment(s) (3)	○	○	○	○	○	○	○	○
The volunteer uniform (4)	○	○	○	○	○	○	○	○
My supervisor (5)	○	○	○	○	○	○	○	○
Time commitment involved (6)	○	○	○	○	○	○	○	○
Parking/transportation for volunteers (7)	○	○	○	○	○	○	○	○
Guidance and support to help me do my tasks (8)	○	○	○	○	○	○	○	○

Organization of medical volunteers for the Games (9)	○	○	○	○	○	○	○	○
Food services for volunteers (10)	○	○	○	○	○	○	○	○
Safety of the working environment (11)	○	○	○	○	○	○	○	○
Venue(s) to which I was assigned (12)	○	○	○	○	○	○	○	○
Rest breaks during my shift(s) (13)	○	○	○	○	○	○	○	○
Comfort of the working environment (14)	○	○	○	○	○	○	○	○
Schedule I was assigned to work (15)	○	○	○	○	○	○	○	○
Recognition for my volunteer contributions (16)	○	○	○	○	○	○	○	○
Training I received (17)	○	○	○	○	○	○	○	○

Medical supplies provided to complete my tasks (18)	○	○	○	○	○	○	○	○
Communication regarding changes to the daily schedule (ex. volunteer absences, break times etc.) (19)	○	○	○	○	○	○	○	○

Q17 Was there anything that was particularly ***rewarding*** about your involvement?

_____

Q18 Was there anything that was particularly problematic or ***dissatisfying*** about your involvement?

_____

Page Break

T8 **Section D. Future Intentions**

Q19 What is the likelihood that you will volunteer for another multi-sport major games?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Prefer not to answer (8)
Hosted in my community (1)	○	○	○	○	○	○	○	○
Hosted in my province/territory (2)	○	○	○	○	○	○	○	○
Hosted anywhere within Canada (3)	○	○	○	○	○	○	○	○
Hosted anywhere internationally (4)	○	○	○	○	○	○	○	○

Q20 What is the likelihood that you would encourage other medical practitioners to volunteer for a multi-sport major games

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	Prefer not to answer (8)
Hosted in their community (1)	○	○	○	○	○	○	○	○
Hosted in their province/territory (2)	○	○	○	○	○	○	○	○
Hosted anywhere within Canada (3)	○	○	○	○	○	○	○	○
Hosted anywhere internationally (4)	○	○	○	○	○	○	○	○

End of Block: Default Question Block

Appendix G Curriculum Vitae

Kelsie Stunden

RMT, CAT(C), MA Management and Leadership (Candidate)

Education:

2021 – Present	Masters of Arts Kinesiology - Management and Leadership (Expected graduation: Fall 2023) Western University, London, Ontario
2019 - 2020	Certificate in Acupuncture and Dry Needling Meridian Health Education, Brampton, Ontario
2011 - 2012	Diploma Massage Therapy (Advanced Standing) Ontario College of Health and Technology, Stoney Creek, Ontario
2005 – 2009	Bachelor of Applied Health Sciences (Athletic Therapy) Sheridan College, Oakville, Ontario

Certifications:

- Registered Massage Therapist (#R-208)
- Certified as an Athletic Therapist in all provinces of Canada (#2-3896)
- Certified as a First Responder by the Canadian Red Cross
- Certified in HCP CPR by the Canadian Red Cross

Professional Affiliations:

- College of Massage Therapists of Ontario RMT (#R-208)
- Canadian Athletic Therapists Association CAT(C) (#2-3896)

Awards:

2022	Niagara College – Luciano Berardocco Memorial Award Received due to outstanding contribution to intercollegiate athletics.
2021	Niagara College – Award of Excellence (Team Award)

Received due to demonstrated excellence as part of the "Tap In" team at Niagara College. The tap in team worked together to coordinate the safe return to in-class learning during the COVID-19 Pandemic.

2009 Sheridan College – Dr. Fried Award
Received due to my commitment to faculty, peers, and the Athletic Therapy program.

2007 Sheridan College – First Responder Award
Received due to excellence in managing stressful emergency situations in a timely and effective manner.

Employment:

March 2019 – Present **College of Massage Therapists of Ontario**

Objective Structured Clinical Examination (OSCE) Examiner (French & English)

- Examine massage therapy certification candidates in the assessment and patient interview station of their OSCE.

Oct 2017 – Present **Sports Medicine Connection**

Owner, Certified Athletic Therapist / Registered Massage Therapist

- Coordinate medical coverage for sporting events in and around the Niagara Region.
- Liaise with varying medical professionals in the Niagara Region to ensure quality care for athletes who endure sport related illness or injury.
- Provide thorough assessment of musculoskeletal injuries.
- Create and implement rehabilitation programs for patients to complete both in the clinical setting and at home.
- Utilize modalities such as ultrasound, IFC, NMES, TENS, hydrotherapy, and cupping.
- Create invoices and complete transactions for appointments.

Sept 2016 – Present **Niagara College**

Certified Athletic Therapist / Placement Supervisor

- Provide all on field care to Niagara College's varsity athletes including emergency care, sideline injury assessments, pre-game taping and quick and competent return to play decisions.
- Deliver thorough clinical injury assessments a long with create and implement rehabilitation protocols to ensure a safe and efficient return to play.

- Clinical liaison between the varsity athletics and both the Fitness and Health Promotions program and the Exercise Science and Health Performance program. I provide an effective learning environment for students and supervise them throughout their placement term culminating in valuable feedback on their performance.
- Responsible for all administrative duties within the clinic including maintenance and organization of all confidential medical records, ensure the therapy schedule is in manageable order and to monitor and order supplies as needed.
- Absorb valuable feedback from athletes, administrators, and placement coordinators to design and implement strategic policies to improve our program.

Sept 2021 – April 2023 **Graduate Teaching Assistant (GTA)**

Department of Kinesiology, Western University, London, Ontario

- KINESIOL 3336 - Introduction to the Practical Aspects of Athletic Injuries (Winter 2023)
- KINESIOL 3398 - Managing People in Sport and Recreation Organizations (Fall 2022)
- KINESIOL 3222 - Anatomy of the Human Body: A description of systemic structure & function (Winter 2022)
- KINESIOL 3330 - Laboratory in Exercise Physiology (Fall 2021)

May 2019 – Mar 2020 **Niagara River Lions, Canadian Elite Basketball League**

Head Athletic Therapist

- Assembled a team of medical professionals including a physician, chiropractor and strength and conditioning coach to provide well-rounded medical care for the athletes.
- Created and collected medical histories for each athlete and helped facilitate the pre-participation medical exams.
- Conducted pre-participation baseline concussion testing including SCAT5 and Vestibular Ocular Motor Screening.
- Attended all practices and games for on field emergency care along with injury assessments and pre-participation taping and wrapping.
- Provided rehabilitation to musculoskeletal injuries in a clinical setting and created home exercise programs to allow continued improvements outside of the clinic.
- Hired and supervised two athletic therapy students throughout the season and completed associated placement evaluations.

Oct 2015 – Aug 2017 **Goodlife Fitness**

Certified Athletic Therapist / Registered Massage Therapist

- Performed thorough injury assessments along with designed and implemented individualized rehabilitation programs for patients.
- Created exercise rehabilitation programs for patients to complete outside of therapy.
- Completed appointment transactions using cash, debit, and credit.
- Created and implemented plans to reach our monthly treatment goals.

Sept 2013 – May 2016 **Sports Medicine Experts**

Certified Athletic Therapist / Registered Massage Therapist

- Certified Athletic Therapist for all varsity athletics at Mohawk College.
- Supervised students of the Registered Massage Therapy Program at Mohawk College and the Athletic Therapy Program at Sheridan College during their field and clinical placements with Sports Medicine Experts.
- Responsible for ensuring strong organizational standards in the workplace, while playing a lead role in the administration of employee benefit packages.
- Assessed the rehabilitation needs of each individual private client and developed, implemented, and progressed rehabilitation programs that allowed a rapid return to work or activity.

Volunteer:

Aug 2022 – Present **Canada Summer Games – Niagara 2022**

Medical Venue Co-Lead – Niagara College

- Attend and actively participate in all medical and venue planning meetings leading up to the games.
- Create a volunteer schedule to ensure sufficient medical coverage for the Niagara College events.
- Create and communicate the Emergency Action Plan for Niagara College.
- Train the medical volunteers on medical policies and procedures in place for Niagara College during the games.

June 2022 – Present **Canadian Athletic Therapy Association (CATA)**

Chair – Member Services Committee (MSC)

- Responsible for supporting the three MSC mandates: Awards, Elections/Annual Members Meeting, Volunteers.
- Create agendas, schedule, and chair quarterly team meetings.
- Work collaboratively with team members to determine mandate specific and committee goals for the upcoming year.
- Ensure smooth transition of outgoing and incoming volunteers on the MSC.
- Complete annual committee review and provide any updates to our Executive Director.

May 2021 – May 2022 **Ontario Colleges Athletic Association (OCAA)**

Committee Member - ***Therapy & Performance Advisory Committee***

- Worked together with the OCAA to ensure up to date medical requirements for all Ontario College's varsity athletics.
- Review all medical policies and procedures to ensure abidance to all provincial and national requirements for different varsity sports.

- Review injury statistics from previous season and provide suggestions for potential prevention methods moving forward.

Jan 2017 – May 2022 **Canadian Athletic Therapy Association (CATA)**

Awards Coordinator – Member Services Committee

- Liaison between CATA and its members regarding all annual award and banquet inquiries.
- Utilize Microsoft Teams and One Drive as our team communication and file sharing systems.
- Intake and organize all award applications and nominations.
- Organize and implement all aspects of our annual awards banquet including ensuring appropriate recipients, recipient attendance, presence of all awards and prizes and scheduling of banquet emcee.
- Work closely with the Member Services Committee Chair and fellow members, various other committees within CATA and our dedicated award sponsors to ensure the event runs smoothly and is an engaging event for all attendees.

Oct 2017 – June 2018 **FIBA Under-18 Americas Championship, St. Catharines, ON**

Athletic Therapy Coordinator / Chief Therapist

- Marketed the medical volunteer positions available with our provincial and national associations.
- Reviewed and selected qualified athletic therapy candidates (both certified and current study) to provide on field emergency care and injury assessments.
- Responsible for coordinating all certified and student athletic therapists for the duration of the tournament at two locations.
- Created a required inventory and worked with medical supply companies to build sponsorship in order to provide the necessary equipment and supplies.
- Was a key liaison between the tournament host committee and the medical committee to ensure proper policies and procedures were followed according to FIBA.
- Supervised Sheridan's student athletic therapists in a field environment and provided valuable feedback on their performance.

Nov 2015 – Jan 2016 **IIHF Women's World Junior Hockey Championships St. Catharines, ON**

Athletic Therapy Coordinator / Chief Therapist

- Responsible for coordinating all certified and student athletic therapists for the duration of the Women's World Junior Hockey Championships.
- Gathered pertinent information on past field experience and scheduled therapists according to their skills and availability.
- Was a key liaison between the tournament host committee, the Niagara Sport Commission, and the medical committee to ensure proper policies and procedures were followed according to the International Ice Hockey Federation.

- Supervised Sheridan's student athletic therapists in a field environment and provided valuable feedback on their performance.

Continuing Education

May 2023	**Webinar: Athletes, Opioids, and the Athletic Therapist**
July 2022	**Webinar: Diagnosis and Treatment of Mental Illness in High Performance Athletes**
June 2022	**Webinar: Monitoring Readiness After ACL Injury**
November 2020	**MOOC (Massive Open Online Course)**